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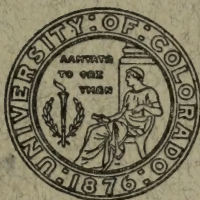
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UNIVERSITY OF COLORADO BULLETIN

Vol. XVIII, No. 4 General Series No. 125

Published Monthly by the Regents of the University of Colorado.
Entered at the Post Office, Boulder, Colorado, as second-class mail matter.

CATALOGUE, 1917-1918



BOULDER, COLORADO, APRIL, 1918

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CATALOGUE, 1917-1918



BOULDER, COLORADO, APRIL, 1918

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1918

CALENDAR

1918

	Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.		Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.		Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.
Jan.	--	--	1	2	3	4	5	May	--	--	--	1	2	3	4	Sept.	1	2	3	4	5	6	7
	6	7	8	9	10	11	12		5	6	7	8	9	10	11		8	9	10	11	12	13	14
	13	14	15	16	17	18	19		12	13	14	15	16	17	18		15	16	17	18	19	20	21
	20	21	22	23	24	25	26		19	20	21	22	23	24	25		22	23	24	25	26	27	28
	27	28	29	30	31	--	--		26	27	28	29	30	31	--		29	30	--	--	--	--	--
Feb.	--	--	--	--	--	1	2	June	--	--	--	--	--	--	1	Oct.	--	--	--	--	--	--	--
	3	4	5	6	7	8	9		2	3	4	5	6	7	8		6	7	8	9	10	11	12
	10	11	12	13	14	15	16		9	10	11	12	13	14	15		13	14	15	16	17	18	19
	17	18	19	20	21	22	23		16	17	18	19	20	21	22		20	21	22	23	24	25	26
	24	25	26	27	28	--	--		23	24	25	26	27	28	29		27	28	29	30	31	--	--
Mar.	--	--	--	--	--	1	2	July	30	--	--	--	--	--	--	Nov.	--	--	--	--	--	1	2
	3	4	5	6	7	8	9		--	1	2	3	4	5	6		3	4	5	6	7	8	9
	10	11	12	13	14	15	16		7	8	9	10	11	12	13		10	11	12	13	14	15	16
	17	18	19	20	21	22	23		14	15	16	17	18	19	20		17	18	19	20	21	22	23
	24	25	26	27	28	29	30		21	22	23	24	25	26	27		24	25	26	27	28	29	30
	31	--	--	--	--	--	--		28	29	30	31	--	--	--		--	--	--	--	--	--	--
Apr.	--	--	--	--	--	--	--	Aug.	--	--	--	--	--	--	--	Dec.	--	--	--	--	--	--	--
	--	1	2	3	4	5	6		4	5	6	7	8	9	10		1	2	3	4	5	6	7
	7	8	9	10	11	12	13		11	12	13	14	15	16	17		8	9	10	11	12	13	14
	14	15	16	17	18	19	20		18	19	20	21	22	23	24		15	16	17	18	19	20	21
	21	22	23	24	25	26	27		25	26	27	28	29	30	31		22	23	24	25	26	27	28
	28	29	30	--	--	--	--		--	--	--	--	--	--	--		29	30	31	--	--	--	--

1919

CALENDAR

1919

	Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.		Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.		Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.
Jan.	--	--	--	1	2	3	4	May	--	--	--	--	1	2	3	Sept.	--	1	2	3	4	5	6
	5	6	7	8	9	10	11		4	5	6	7	8	9	10		7	8	9	10	11	12	13
	12	13	14	15	16	17	18		11	12	13	14	15	16	17		14	15	16	17	18	19	20
	19	20	21	22	23	24	25		18	19	20	21	22	23	24		21	22	23	24	25	26	27
	26	27	28	29	30	31	--		25	26	27	28	29	30	31		28	29	30	--	--	--	--
Feb.	--	--	--	--	--	--	1	June	--	--	--	--	--	--	--	Oct.	--	--	--	--	--	--	--
	2	3	4	5	6	7	8		1	2	3	4	5	6	7		5	6	7	8	9	10	11
	9	10	11	12	13	14	15		8	9	10	11	12	13	14		12	13	14	15	16	17	18
	16	17	18	19	20	21	22		15	16	17	18	19	20	21		19	20	21	22	23	24	25
	23	24	25	26	27	28	--		22	23	24	25	26	27	28		26	27	28	29	30	31	--
Mar.	--	--	--	--	--	--	--	July	--	--	--	--	--	--	--	Nov.	--	--	--	--	--	--	--
	--	--	--	--	--	--	1		--	1	2	3	4	5		--	--	--	--	--	--	--	1
	2	3	4	5	6	7	8		6	7	8	9	10	11	12		2	3	4	5	6	7	8
	9	10	11	12	13	14	15		13	14	15	16	17	18	19		9	10	11	12	13	14	15
	16	17	18	19	20	21	22		20	21	22	23	24	25	26		16	17	18	19	20	21	22
	23	24	25	26	27	28	29		27	28	29	30	31	--	--		23	24	25	26	27	28	29
	30	31	--	--	--	--	--		--	--	--	--	--	--	--		30	--	--	--	--	--	--
Apr.	--	--	1	2	3	4	5	Aug.	3	4	5	6	7	8	9	Dec.	--	1	2	3	4	5	6
	6	7	8	9	10	11	12		10	11	12	13	14	15	16		7	8	9	10	11	12	13
	13	14	15	16	17	18	19		17	18	19	20	21	22	23		14	15	16	17	18	19	20
	20	21	22	23	24	25	26		24	25	26	27	28	29	30		21	22	23	24	25	26	27
	27	28	29	30	--	--	--		31	--	--	--	--	--	--		28	29	30	31	--	--	--

ANNOUNCEMENTS

1918.

- Jan. 16, Wednesday .. Meeting of Board of Regents.
Jan. 28, Monday Second Semester begins.
Feb. 12, Tuesday Lincoln's Birthday (Holiday).
Feb. 22, Friday Washington's Birthday (Holiday).
Mar. 23, Saturday to
Mar. 31, Sunday Spring Recess.
April 17, Wednesday .. Meeting of Board of Regents.
April 19, Friday Arbor Day (Holiday).
May 18, Saturday High-School Day.
May 30, Thursday Decoration Day (Holiday).
May 31, Friday All examinations completed.
June 1, Saturday Phi Beta Kappa Exercises.
 Sigma Xi Exercises.
June 2, Sunday Baccalaureate Address
June 3, Monday Senior Class Play.
 Meeting of Board of Regents.
June 4, Tuesday Class Day Exercises and Parade.
 President's Reception.
 Alumni Banquet and Reception.
 Senior Promenade.
June 5, Wednesday .. Commencement.
June 6, Thursday Summer Vacation begins.
June 24 to August 3... Summer Session.
Sept. 2, Monday Meeting of Board of Regents.

ACADEMIC YEAR, 1918-1919

- Sept. 9, Monday First Semester begins; Registration (Registration begins Friday, Sept. 7).
Sept. 10, Tuesday Assembly of Students at 11:00.
Oct. 12, Saturday Columbus Day (Holiday).
Nov. 13, Wednesday ... Meeting of Board of Regents.
Nov. 28, Thursday Thanksgiving Day (Holiday).
Nov. 29, Friday Holiday.
Dec. 21, Saturday to
Jan. 5, Sunday Winter Recess.

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1919.

- Jan. 15, Wednesday .. Meeting of Board of Regents.
Jan. 27, Monday Second Semester begins.
Feb. 12, Wednesday ... Lincoln's Birthday (Holiday).
Feb. 22, Saturday Washington's Birthday (Holiday).
Mar. 22, Saturday to
Mar. 30, Sunday Spring Recess.
April 16, Wednesday .. Meeting of Board of Regents.
April 18, Friday Arbor Day (Holiday).
May 17, Saturday High-School Day.
May 30, Friday Decoration Day (Holiday).
All examinations completed.
May 31, Saturday Phi Beta Kappa Exercises.
Sigma Xi Exercises.
June 1, Sunday Baccalaureate Address.
June 2, Monday Senior Class Play.
Meeting of Board of Regents.
June 3, Tuesday Class Day Exercises and Parade.
President's Reception.
Alumni Banquet and Reception.
Senior Promenade.
June 4, Wednesday .. Commencement.
June 5, Thursday Summer Vacation begins.
June 23 to August 2... Summer Session.
Sept. 8, Monday Meeting of Board of Regents.

BOARD OF REGENTS

CHARLES R. DUDLEY.....	Denver
Term expires, 1918.	
JAMES B. RAGAN.....	Denver
Term expires, 1918.	
MINNIE LAHM HARDING.....	Canon City
Term expires, 1920.	
CLIFFORD C. PARKS.....	Glenwood Springs
Term expires, 1920.	
THOMAS T. BARNARD.....	Victor
Term expires, 1922.	
CLIFFORD W. MILLS.....	Denver
Term expires, 1922.	

OFFICERS OF THE BOARD

*LIVINGSTON FARRAND.....	Boulder	President
GEORGE NORLIN.....	Boulder	Acting President
FRANK H. WOLCOTT.....	Boulder	Secretary
CHARLES H. CHENEY.....	Boulder	Treasurer

COMMITTEES OF THE BOARD

EXECUTIVE—Messrs. Dudley, Ragan, Farrand.

AUDITING—Messrs. Dudley, Mills, Farrand.

BUILDINGS AND GROUNDS—Messrs. Dudley, Ragan, Farrand.

FINANCE—Mr. Parks, Mrs. Harding.

LIBRARY—Messrs. Dudley, Barnard, Smith.

INSTRUCTORS—Messrs. Farrand, Ragan, Mills.

* On leave of absence, June, 1917, to September, 1918.

ADVISORY BOARD*

	Town.	County.
GEORGE A. GARARD.....	Brighton	Adams Arapahoe
ALLEN J. NOSSAMAN, M.D.....	Pagosa Springs	Archuleta
WILLIAM HOOKER.....	Springfield	Baca
P. G. SCOTT.....	Las Animas	Bent
ALLEN M. LAMBRIGHT.....	Las Animas	Bent
THOMAS BUTLER.....	Longmont	Boulder
GEORGE H. CURFMAN, M.D.....	Salida	Chaffee
E. P. HICKMAN.....	Cheyenne Wells	Cheyenne
ALBERT A. STOVER.....	Idaho Springs	Clear Creek
FREDERICK W. SWANSON.....	Alamosa	Conejos
CHARLES GROENENDYKE.....	San Luis	Costilla Crowley
JOHN H. LEARY.....	Westcliffe	Custer
GEORGE STEPHAN.....	Delta	Delta
GUSTAVE C. BARTELS.....	Denver	Denver
CLAYTON C. DORSEY.....	Denver	Denver
NELSON FRANKLIN.....	Denver	Denver
IRVING HALE.....	Denver	Denver
HORACE N. HAWKINS.....	Denver	Denver
EDWIN H. PARK.....	Denver	Denver
JOHN H. GABRIEL.....	Denver	Denver
FRANK E. SHEPARD.....	Denver	Denver
JOHN W. SPRINGER.....	Denver	Denver
THOMAS B. STEARNS.....	Denver	Denver
THOMAS L. WILKINSON.....	Denver	Denver
CHARLES MACALLISTER WILLCOX....	Denver	Denver
MRS. ANNA WOLCOTT VAILE.....	Denver	Denver Dolores
JOHN ANDERSON.....	Castle Rock	Douglas
JAMES DILTS.....	Eagle	Eagle
WILLIAM D. REILLY.....	Kiowa	Elbert
JOSEPH F. HUMPHREY.....	Colorado Springs	El Paso
ROBERT KERR.....	Colorado Springs	El Paso

* The members of the Advisory Board are appointed by the Regents for a term of one year. The service is without compensation. Annual meetings of the Advisory Board are held at the University, Tuesday and Wednesday of Commencement week.

	Town.	County.
MATT N. LINES.....	Canon City.....	Fremont
JAMES G. JOHNSTON.....	Florence	Fremont
BARNETTE T. NAPIER.....	Glenwood Springs.....	Garfield
CHASE WITHROW.....	Central City.....	Gilpin
DAVID P. HOWARD.....	Sulphur Springs.....	Grand
JOHN A. LEHRITTER.....	Gunnison	Gunnison
BENJAMIN F. CUMMINGS, M.D.....	Lake City.....	Hinsdale
CHARLES HAYDEN.....	Walsenburg	Huerfano
OWEN S. CASE.....	Walden	Jackson
WILLIAM G. SMITH.....	Golden	Jefferson
RAYMOND MILLER.....	Galatea	Kiowa
WILLIAM D. SELDER.....	Burlington	Kit Carson
CHARLES CAVENDER.....	Leadville	Lake
CHARLES A. PIKE.....	Durango	La Plata
FRANK J. ANNIS.....	Fort Collins.....	Larimer
JOSEPH C. BELL.....	Trinidad	Las Animas
EDWARD H. DAY.....	Trinidad	Las Animas
EUSEBIO CHACON.....	Trinidad	Las Animas
		Lincoln
L. K. PARR.....	Padroni	Logan
HORACE T. DELONG.....	Grand Junction.....	Mesa
		Mineral
ROBERT M. RICHARDSON.....	Craig	Moffat
LEONARD H. CLARK, M.D.....	Mancos	Montezuma
J. F. COLEMAN, M.D.....	Montrose	Montrose
FREDERICK W. LOCKWOOD, M.D.....	Fort Morgan.....	Morgan
ROBERT W. PATTERSON.....	La Junta.....	Otero
G. M. DAMERON.....	La Junta.....	Otero
WILLIAM W. ROWAN, M.D.....	Ouray	Ouray
		Park
R. G. MCKIBBEN.....	Holyoke	Phillips
		Pitkin
JOHN C. HORN.....	Lamar	Prowers
C. B. THOMAN.....	Lamar	Prowers
J. K. DOUGHTY.....	Lamar	Prowers
ALVA ADAMS.....	Pueblo	Pueblo
P. J. DUGAN.....	Pueblo	Pueblo
JAMES LYTTLE.....	Meeker	Rio Blanco
ROBERT G. BRECKENRIDGE.....	Monte Vista	Rio Grande

	Town.	County.
JOHN A. BILES, M.D.....	<i>Del Norte</i>	<i>Rio Grande</i>
BENJAMIN F. NIESZ.....	<i>Steamboat Springs</i>	<i>Routt</i>
CHARLES TARBELL.....	<i>Saguache</i>	<i>Saguache</i>
WILLIAM J. KING.....	<i>Villa Grove</i>	<i>Saguache</i>
JOHN T. JOYCE.....	<i>Silverton</i>	<i>San Juan</i>
STEPHEN A. BAILEY.....	<i>Telluride</i>	<i>San Miguel</i>
BERTRAND D. PARKER, JR.....	<i>Julesburg</i>	<i>Sedgwick</i>
CLARENCE O. FINCH.....	<i>Julesburg</i>	<i>Sedgwick</i>
WILLIAM F. FORMAN.....	<i>Breckenridge</i>	<i>Summit</i>
GRIFFITH R. LEWIS.....	<i>Cripple Creek</i>	<i>Teller</i>
HAROLD D. THOMPSON.....	<i>Cripple Creek</i>	<i>Teller</i>
EGBERT MORE.....	<i>Akron</i>	<i>Washington</i>
GEORGE D. STATLER.....	<i>Greeley</i>	<i>Weld</i>
THOMAS B. GROVES.....	<i>Wray</i>	<i>Yuma</i>

COLLEGES AND SCHOOLS OF THE UNIVERSITY

I. COLLEGE OF LIBERAL ARTS:

Leading to the degree A.B.

College of Commerce:

Leading to the degree A.B. and special certificate.

College of Education:

Leading to the degree A.B. and special certificate.

College of Home Economics and Social Service:

Leading to the degree B.S.

II. COLLEGE OF ENGINEERING:

Civil Engineering, leading to the degree B.S. (C.E.).

Electrical Engineering, leading to the degree B.S. (E.E.).

Mechanical Engineering, leading to the degree B.S. (M.E.).

Chemical Engineering, leading to the degree B.S. (Ch.E.).

III. GRADUATE SCHOOL:

Leading to the degrees Ph.D. and A.M.; M.S., C.E., E.E.,
and M.E.; D.Oph., D.P.H., M.S. (P.H.), and M.S. (San.
Eng.).

IV. SCHOOL OF MEDICINE:

Leading to the degree M.D.

V. SCHOOL OF LAW:

Leading to the degree LL.B.

VI. COLLEGE OF PHARMACY:

Leading to the degrees Ph.G., Ph.C., and B.S. (Phar.).

VII. SUMMER SESSION.

VIII. UNIVERSITY EXTENSION DIVISION:

Department of Instruction:

Correspondence Instruction.

Class Instruction.

Vocational Instruction.

Visual Instruction.

Department of Public Service:

Lectures.

Community Welfare.

Business Short Courses.

Library Extension.

Municipal Information.

Publications.

GENERAL FACULTY*

- †LIVINGSTON FARRAND, A.M., M.D., LL.D., President.
GEORGE NORLIN, Ph.D., Acting President; Professor of Greek.
JAMES H. BAKER, A.M., LL.D., President, Emeritus.
J. RAYMOND BRACKETT, Ph.D., Dean of the Graduate School; Professor of Comparative and English Literature.
LUMAN M. GIFFIN, M.D., Professor of Surgery, Emeritus.
IRA M. DELONG, A.M., LL.D., Professor of Mathematics.
JOHN CHASE, A.B., M.D., Professor of Ophthalmology, Emeritus.
THOMAS E. TAYLOR, A.B., M.D., Professor of Obstetrics, Emeritus.
ALBERT A. REED, LL.B., Professor of Law, Emeritus.
WILLIAM B. CRAIG, M.D., Professor of Surgery, Emeritus.
E. BARBER QUEAL, M.D., Professor of Physiology, Emeritus.
FRED B. R. HELLEMS, Ph.D., LL.D., Dean of the College of Liberal Arts; Professor of Latin.
CHARLES C. AYER, Ph.D., Professor of Romance Languages.
FRANCIS RAMALEY, Ph.D., Acting Dean of the College of Pharmacy; Professor of Biology.
NEWTON WIEST, M.D., Professor of Dermatology, Emeritus.
‡MELANCHTHON F. LIBBY, Ph.D., Professor of Philosophy.
JOHN BERNARD EKELEY, Ph.D., Sc.D., Professor of Chemistry.
JOHN CAMPBELL, A.M., LL.B., LL.D., Dean of the School of Law, Emeritus.
RUSSELL D. GEORGE, A.M., Professor of Geology.
JOHN D. FLEMING, A.B., LL.B., LL.D., Dean of the School of Law; Charles Inglis Thomson Professor of Law.
JAMES R. ARNEILL, A.B., M.D., Professor of Medicine, Emeritus.
§MILO S. KETCHUM, C.E., Dean of the College of Engineering; Professor of Civil Engineering.
CHARLES B. LYMAN, M.D., Professor of Clinical Surgery.
JOHN M. FOSTER, M.D., Professor of Oto-laryngology, Emeritus.

* Professors, Assistant Professors, Lecturers, and Instructors are arranged in the order of appointment. Assistants rank as their departments. Within the general faculty are organized the Advisory Council, Senate, and faculties of the several schools and colleges.

† On leave of absence, June, 1917, to September, 1918, for war service.

‡ On leave of absence, second semester, 1917-1918.

§ On leave of absence, second semester, 1917-1918, for war service.

- EDWARD JACKSON, A.M., M.D., Sc.D., Professor of Ophthalmology.
HERBERT S. EVANS, E.E., Acting Dean of the College of Engineering; Professor of Electrical Engineering.
JOHN A. HUNTER, M.E., Professor of Mechanical Engineering.
THEODORE D. A. COCKERELL, Sc.D., Professor of Zoology.
WILLIAM P. HARLOW, A.B., M.D., Dean of the School of Medicine, Emeritus.
GEORGE M. CHADWICK, Professor of Music.
JAMES F. WILLARD, Ph.D., Professor of History.
OLIVER C. LESTER, Ph.D., Professor of Physics.
FRANK E. THOMPSON, A.B., Director of the College of Education; Professor of Education.
ROSS C. WHITMAN, A.B., M.D., Secretary of the School of Medicine, Boulder Division; Professor of Pathology.
JUNIUS HENDERSON, A.B., Curator of the Museum; Professor of Natural History.
JOHN S. MCLUCAS, A.M., Professor of English.
GRACE VAN SWERINGEN BAUR, Ph.D., Professor of Germanic Languages.
*ALVIN R. PEEBLES, M.D., Director of the Henry S. Denison Research Laboratory; Professor of Preventive and Experimental Medicine.
†CLOUGH T. BURNETT, M.D., Professor of Bacteriology.
MILO G. DERHAM, Ph.D., Director of the Summer Session; Professor of Latin.
LAWRENCE W. COLE, Ph.D., Director of the College of Home Economics and Social Service; Professor of Psychology.
GEORGE E. NEUHAUS, M.D., Professor of Neurology and Psychiatry.
EDMUND J. A. ROGERS, A.M., M.D., Professor of Surgery, Emeritus.
THOMAS H. HAWKINS, A.M., M.D., LL.D., Professor of Surgery, Emeritus.
ROBERT LEVY, M.D., Professor of Oto-laryngology.
‡WILLIAM H. DAVIS, M.D., Professor of Dermatology, Emeritus.
WILLIAM J. ROTHWELL, M.D., Professor of Medicine, Emeritus.
FRANCIS H. McNAUGHT, M.D., Professor of Obstetrics, Emeritus.
LEONARD FREEMAN, B.S., A.M., M.D., Professor of Surgery.
‡CHARLES A. POWERS, A.M., M.D., Professor of Surgery, Emeritus.

* Died October 22, 1917.

† On leave of absence, February, 1918, to February, 1919, for war service.

‡ On war service.

- HERBERT B. WHITNEY, A.B., M.D., Professor of Medicine, Emeritus.
SHERMAN G. BONNEY, A.M., M.D., Professor of Medicine, Emeritus.
GEORGE B. PACKARD, M.D., Professor of Orthopedics, Emeritus.
T. MITCHELL BURNS, M.D., Professor of Obstetrics, Emeritus.
*WALTER A. JAYNE, M.D., Professor of Gynecology, Emeritus.
CHARLES B. VAN ZANT, M.D., Professor of Physiology, Emeritus.
WILLIAM C. MITCHELL, M.D., Professor of Bacteriology, Emeritus.
DAVID H. COOVER, M.D., Professor of Ophthalmology, Emeritus.
JAMES C. TODD, Ph.B., M.D., Professor of Clinical Pathology.
CARBON GILLASPIE, M.D., Professor of Anatomy.
†HOMER C. WASHBURN, Ph.C., B.S. (Phar.), Dean of the College of
Pharmacy; Professor of Pharmacy.
†ARTHUR J. MARKLEY, D.D.S., M.D., Professor of Dermatology and
Syphilis.
LORAN D. OSBORN, Ph.D., Director of the Extension Division; Pro-
fessor of Sociology.
FREDERICK A. BUSHEE, Ph.D., Director of the College of Commerce;
Professor of Economics and Sociology.
RALPH D. CRAWFORD, Ph.D., Professor of Mineralogy and Petrology.
†HARRY A. CURTIS, B.S. (Ch.E.), Ph.D., Professor of Physical Chem-
istry.
†FRED G. FOLSOM, A.B., LL.B., Professor of Law.
WILLIAM R. ARTHUR, A.B., LL.B., Professor of Law.
CHARLES N. MEADER, A.B., M.D., Dean of the School of Medicine;
Professor of Medicine.
FRANK L. CLAPP, Ph.D., Professor of School Administration.
ARNOLD J. LIEN, Ph.D., Professor of Political Science.
ROBERT C. LEWIS, Ph.D., Acting Director of Henry S. Denison Re-
search Laboratory; Professor of Physiology and Biochemistry.
HERBERT S. HADLEY, A.B., LL.B., LL.D., Professor of Law.
WILLIAM BLACK, M.E., Professor of Steam and Gas Engineering.
†CLARENCE B. INGRAHAM, Ph.B., M.D., Professor of Obstetrics and
Gynecology.
JAMES A. MERRITT, Captain, U. S. A., Retired, Professor of Mili-
tary Science and Tactics.
‡OSCAR M. GILBERT, M.D., Associate Professor of Medicine.
†JOSIAH N. HALL, B.S., M.D., Associate Professor of Medicine.

* On war service.

† On leave of absence for war service.

‡ On leave of absence, first semester, 1917-1918, for war service.

HOWELL T. PERSHING, M.S., M.D., LL.D., Associate Professor of Psychiatry.

MOSES KLEINER, M.D., Associate Professor of Therapeutics.

MELVILLE BLACK, M.D., Associate Professor of Ophthalmology.

SAMUEL B. CHILDS, A.B., M.D., Associate Professor of Roentgenology.

WILLIAM C. BANE, M.D., Associate Professor of Oto-laryngology.

*OLIVER LYONS, M.D., Associate Professor of Genito-Urinary Surgery.

*SAMUEL FOSDICK JONES, M.D., Associate Professor of Orthopedic Surgery.

FRANK P. GENGENBACH, M.D., Associate Professor of Pediatrics.

DAVID R. JENKINS, E.E., Director of the Electrical Standardizing Laboratory; Assistant Professor of Electrical Engineering.

S. ANTOINETTE BIGELOW, A.M., Dean of Women; Assistant Professor of English Literature.

FROST C. BUCHTEL, M.D., Assistant Professor of Surgery.

*EDWARD F. DEAN, M.D., Assistant Professor of Clinical Surgery.

AUBREY H. WILLIAMS, M.D., Assistant Professor of Clinical Surgery.

†C. HENRY SMITH, Ph.B., Librarian; Assistant Professor of Bibliography.

WILLIAM A. COOK, Ph.D., High-School Visitor; Assistant Professor of Education.

‡WHITNEY C. HUNTINGTON, C.E., Assistant Professor of Civil Engineering.

HOWARD E. PHELPS, C.E., Assistant Professor of Civil Engineering.

MAX M. ELLIS, Ph.D., Sc.D., Assistant Professor of Biology.

CARL C. ECKHARDT, Ph.D., Assistant Professor of History.

FRANK S. BAUER, M.E., Assistant Professor of Mechanical Engineering.

PHILIP G. WORCESTER, A.M., Assistant Professor of Geology.

WILLIAM F. BAUR, Ph.B., Assistant Professor of Germanic Languages.

FRANK G. ALLEN, B.S. (M.E.), Assistant Professor of Engineering Drawing.

* On leave of absence for war service.

† On leave of absence, first semester, 1917-1918, for war service.

‡ Acting Professor of Civil Engineering and Assistant Dean of the College of Engineering during the absence of Dean Ketchum.

CHARLES S. SPERRY, A.B., C.E., Assistant Professor of Engineering Mathematics.

JAY W. WOODROW, Ph.D., Assistant Professor of Physics.

†IVAN C. CRAWFORD, C.E., Assistant Professor of Civil Engineering.

HERBERT B. DWIGHT, E.E., Assistant Professor of Electrical Engineering.

PAUL M. DEAN, Ph.D., Assistant Professor of Chemistry.

HUGH C. PRYOR, A.M., Assistant Professor of Education.

GEORGE H. LIGHT, Ph.D., Assistant Professor of Mathematics.

THOMAS MAITLAND MARSHALL, Ph.D., Assistant Professor of History.

*GEORGE H. CATTERMOLLE, M.D., Assistant Professor of Pediatrics.

EDWARD DELEHANTY, M.D., Assistant Professor of Neurology.

CLAUDE EDWARD COOPER, A.B., M.D., Assistant Professor of Otolaryngology.

RUDOLPH W. ARNDT, M.D., Assistant Professor of Medicine.

GEORGE A. MOLEEN, M.D., Assistant Professor of Neurology.

EDWIN W. PATTERSON, A.B., LL.B., Assistant Professor of Law.

CHARLES M. GRUBER, Ph.D., Assistant Professor of Physiology and Pharmacology.

†CHARLES F. POE, A.M., B.S. (Phar.), Acting Assistant Professor of Pharmacy.

FRANCIS J. PERUSSE, B.Sc., Acting Assistant Professor of Pharmacy.

†JAMES N. ASHMORE, Director of Physical Education.

HELEN MASTERS BUNTING, Director of Physical Education for Women.

ELMORE PETERSEN, A.B., Extension Superintendent of Southeastern Colorado District.

ARTHUR E. GILMAN, A.B., Secretary of the Bureau of Community Welfare.

JAMES C. STEPHENS, A.B., Secretary of the Bureau of Vocational Instruction.

ROBERT S. MORRISON, Lecturer on Law of Mines and Mining.

†WILLARD J. WHITE, A.M., M.D., Lecturer on Medical Jurisprudence.

JAMES W. MCCREERY, Lecturer on Law of Irrigation and Water Rights.

JOHN E. ROBINSON, Lecturer on Bankruptcy.

* On leave of absence for war service, first semester, 1917-1918.

† On leave of absence for war service.

- HARRY S. SILVERSTEIN, A.B., Lecturer on Criminal Procedure.
HENRY E. LUTZ, LL.B., Lecturer on Equity Pleading and Practice.
LYMAN P. WELD, LL.B., Lecturer on Conveyancing and Abstracts.
JOHN H. FRY, LL.B., Lecturer on Auxiliary Code Remedies.
HENRY SEWALL, Ph.D., M.D., Sc.D., Lecturer on Medicine.
JAMES H. PERSHING, A.B., Lecturer on Medical Jurisprudence.
ARTHUR H. EARLEY, M.D., Lecturer on Rectal Surgery.
HAROLD P. MARTIN, Ph.B., LL.B., Lecturer on Colorado Code of Civil Procedure.
EDWIN J. INGRAM, A.B., LL.B., Lecturer on Practice and Procedure and Judge of the Practice Court.
ELSIE S. PRATT, M.D., Medical Adviser to Women.
FRANK R. SPENCER, A.B., M.D., Instructor in Oto-laryngology.
CLAY E. GIFFIN, A.B., M.D., Instructor in Surgery.
DONALD MCFAYDEN, B.D., Ph.D., Instructor in History.
LORENA UNDERHILL, A.M., Instructor in Philosophy.
RUTH M. SHELEDY, A.M., Instructor in German.
JOHN H. V. FINNEY, B.S. (E.E.), Instructor in Physics.
*JESSIE HUTSINPILLAR, A.M., Instructor in English.
MARIE SORENSON, A.M., Instructor in English.
CLARIBEL KENDALL, A.M., Instructor in Mathematics.
*FRANCIS WOLLE, A.M., Instructor in English Literature.
CHARLES M. MCCORMICK, E.E., Instructor in Electrical Engineering.
HENRY WILLIAMS WILCOX, M.D., Instructor in Orthopedic Surgery.
†CYRUS L. PERSHING, B.S., M.D., Instructor in Neurology.
WILLIAM H. CRISP, M.D., D.Oph., Instructor in Ophthalmology.
‡FLORENCE GALLIGAN JOSLYN, A.M., Instructor in Education.
JAMES L. MERRILL, B.S. (C.E.), Instructor in Engineering Drawing.
WALTER F. MALLORY, B.S. (M.E.), Instructor in Mechanical Engineering.
†CLARENCE L. ECKEL, B.S., (C.E.), Instructor in Civil Engineering.
EDWARD R. MUGRAGE, A.M., M.D., Director of Laboratories (Dentist); Instructor in Pathology.
DOROTHY M. BURTON, A.B., Instructor in English Literature.
†ERSKINE R. MYER, A.B., Instructor in English.

* On leave of absence, 1917-1918.

† On leave of absence for war service.

‡ Resigned December 22, 1917.

- *WILLIAM WILEY JONES, A.B., M.D., Instructor in Medicine.
 MAUD E. CRAIG, A.M., Instructor in Latin.
- †ARTHUR T. EVANS, A.M., Instructor in Biology.
- †EDWIN B. PLACE, A.M., Instructor in Romance Languages.
 IRENE P. MCKEEHAN, A.M., Instructor in English.
- JOHN J. FLACH, B.S. (E.E.), Instructor in Engineering Mathematics.
- *GEORGE P. LINGENFELTER, M.D., Instructor in Dermatology and Syphilis.
- CLAIR V. MANN, B.S. (C.E.), Instructor in Engineering Mathematics.
- ‡JAMES H. COWLES, A.B., Instructor in Life Insurance and Extension Instructor.
- OSCAR A. RANDOLPH, Ph.D., Instructor in Physics.
 GLADYS C. CURTIS, A.M., Instructor in Education.
 ALICE DOWNING HUNTER, A.M., Instructor in English.
 OLIN INGRAHAM, A.M., Instructor in Economics.
- *WILLARD W. RUSK, B.S. (C.E.), Instructor in Civil Engineering.
 ELLERT L. McGRATH, B.S. (C.E.), Instructor in Engineering Mathematics.
- CHESTER H. ELLIOTT, M.S., M.D., Instructor in Pathology.
 BEATRICE BOLAN, Instructor in Physical Education for Women.
 ARTHUR CHAPMAN, Litt.M., Instructor in Journalism.
- *ESBON Y. TITUS, Ph.D., Instructor in Chemistry.
 JOHN RENNELL, Instructor in Art.
 BESSIE R. GREEN, A.M., Instructor in Biology.
 ARTHUR WILLIAMS, A.M., Instructor in Greek.
 SUSAN BLAKEY, A.B., B.S., Instructor in Home Economics.
 JOHN D. COOKE, A.M., Instructor in English Literature.
- §CORNELIUS C. JANZEN, A.M., Instructor in Extension Division.
 LAZARE B. ALSSID, A.B., Instructor in Romance Languages.
 PHILIP B. McDONALD, B.S., E.M., Instructor in Engineering English.
 JOHN MURRAY BARNEY, M.D., Instructor in Medicine.
 JOHN B. DAVIS, M.D., Instructor in Genito-Urinary Surgery.
 CASPER F. HEGNER, M.D., Instructor in Surgery.
 OSCAR M. SHERE, M.D., Instructor in Surgery.
- *CUTHBERT POWELL, M.D., Instructor in Gynecology.

* On leave of absence for war service.

† On leave of absence, 1917-1918.

‡ On leave of absence, second semester, 1917-1918, for war service.

§ First semester, 1917-1918.

FOSTER H. CARY, M.D., Instructor in Obstetrics.

CHARLES A. FERRIS, M.D., Instructor in Obstetrics.

*PHILLIPS M. CHASE, M.D., Instructor in Obstetrics.

HARRY R. BAUM, M.D., Instructor in Oto-larynology.

HAROLD TUPPER MEAD, M.D., Instructor in Anatomy.

†RICHARD B. SCANDRETT, JR., A.B., LL.B., Acting Instructor in Law.

BRYANT SMITH, A.B., LL.B., Instructor in Debating.

MARY V. McFARLAND, A.B., Instructor in Psychology.

RUSSELL N. LOOMIS, B.S. (Phar.), Instructor in Chemistry.

HORACE B. VAN VALKENBURGH, M.S., Instructor in Chemistry.

BENJAMIN D. CORNELL, A.B., Instructor in Chemistry.

BEN W. ROWLAND, A.B., Instructor in Chemistry.

‡ROBERT A. KLAHR, A.B., M.C.S., C.P.A., Instructor in Economics.

CHARLES A. ROUSE, A.M., Instructor in Engineering English.

CARL KNOETTGE, A.B., B.S. (C.E.), Instructor in Civil Engineering.

WAYNE S. BEATTIE, B.S. (M.E.), Instructor in Mechanical Engineering.

LESLIE E. MINER, B.S., Instructor in Civil Engineering.

JOHN F. GREENE, B.S. (C.E.), Instructor in Civil Engineering.

EVA M. BAUM, A.B., Instructor in Chemistry.

WANDA I. FRAIKEN, A.M., Instructor in English.

LEWIS M. BECKER, B.S. in M.E., Instructor in Mechanical Engineering.

ARTHUR L. EDGECOMB, Instructor in Telegraphy.

MELBOURNE C. EVANS, B.S., Instructor in Gymnasium.

§CLARA HISCOCK BRACE, A.B., Instructor in Education.

TRACY R. LOVE, Ph.B., M.D., Instructor in Dietetics.

§HENRY M. SAYRE, Instructor in Accounting.

*WILLIAM C. FINNOFF, M.D., D.Oph., Instructor in Ophthalmology.

JOHN A. McCAW, M.D., D.Oph., Instructor in Ophthalmology.

*WILLIAM A. SEDWICK, M.D., Instructor in Ophthalmology.

HIRAM R. STILWILL, M.D., Instructor in Ophthalmology.

§RUSH E. THOMAS, B.S., (C.E.), Instructor in Civil Engineering.

§PARKER R. WHITNEY, B.S. (C.E.), Instructor in Civil Engineering.

MAY SNYDER, A.B., Assistant in Romance Languages.

V. A. VAN DUZER, Assistant in Romance Languages.

*EDWIN D. HULL, M.S., Assistant in Biology.

* On leave of absence for war service.

† Resigned January 28, 1918, for war service.

‡ Died January 2, 1918.

§ Second semester, 1917-1918.

- *GLENWOOD C. ROE, A.B., Assistant in Biology.
- †BERTRAM JAFFA, A.B., Assistant in Biology.
- W. WARREN HOWE, A.B., Assistant in Chemistry.
- JAMES TERRY DUCE, A.B., Assistant in Geology.
- RALPH HUBBARD, A.B., Assistant in the Museum and in Zoology.
- LEROY A. MACCOLL, Assistant in Physics.
- *BERNARD P. HEUBNER, A.B., Assistant in Education.
- †NEWTON J. RICE, A.B., Assistant in Education.
- ARTHUR H. RHOLL, A.B., Assistant in Norwegian and German.
- *FRIEDA MEENTS, A.B., Assistant in German.
- †HAROLD P. MUNCK, A.B., Assistant in Economics.
- CHARLES M. SCHLOSS, Assistant in Electrical Engineering.
- FRANK C. KENNELLY, M.D., Assistant in Medicine.
- E. T. BOYD, M.D., Assistant in Ophthalmology.
- †WILLIAM M. BANE, M.D., Assistant in Oto-laryngology.
- INEZ KINNISON, Laboratory Assistant in Pathology and Physiology.
- MAURICE KATZMAN, Laboratory Assistant in Pathology.
- LEO B. COHENOUR, A.B., Laboratory Assistant in Pathology.
- THADDEUS P. SEARS, A.B., Laboratory Assistant in Clinical Pathology.
- SARA BRANHAM, Laboratory Assistant in Anatomy and Bacteriology.
- ICIE MACY, A.B., Laboratory and Library Assistant in Biochemistry.
- AGNES P. BECHMANN, Ph.C., Assistant in Pharmacy.
- WILBUR W. ADAMS, Assistant in Gymnasium.
- †FRED E. HAGEN, A.B., Secretary and Registrar.
- F. GRACE HALL, A.B., Acting Registrar.
- RUTH N. CRARY, A.B., Acting Assistant Registrar.
- FRANK H. WOLCOTT, B.S., Secretary of the Board of Regents and Bursar.
- §C. HENRY SMITH, Ph.B., Librarian.
- ¶EMMA A. JACKSON, A.B., Assistant Librarian.
- ELIZABETH F. SELLECK, A.B., Assistant Librarian.
- LILLIAN CHAPPEL, Assistant Librarian.
- MILDRED E. KAMMAN, A.B., Assistant in Engineering Library.
- CICELY SHERWOOD, Law Librarian.
- H. SPENCER GELTZ, Secretary, Teachers Appointments Office.
- JOSEPH KLEMME, Superintendent of Buildings and Grounds.

* Resigned January 25, 1918.

† Second semester, 1917-1918.

‡ On leave of absence for war service.

§ On leave of absence for war service, first semester, 1917-1918.

¶ Acting Librarian, first semester, 1917-1918.

GENERAL STATEMENT

HISTORY

The University of Colorado was incorporated by an act of the First Territorial Legislature of Colorado, in 1861, and the location fixed at Boulder. The act states that the University was "designated to promote and encourage the diffusion of knowledge, in all the branches of learning, including the scientific, literary, theological, legal and medical departments of instruction". A board of trustees with needful powers was constituted, but never met to transact business. A second act of the year 1870 revived the project of a university at Boulder and reconstituted the board of trustees. In 1872, three public-spirited citizens of Boulder gave the University fifty-two acres of land adjoining the city. In 1874, the Territorial Legislature appropriated \$15,000 to the University, conditioned on the raising by the trustees of an equal amount "by subscription, donation, or otherwise". The trustees having met this condition, the first installment of the appropriation was paid on June 7, 1875. Plans for the erection of a building were then made. In 1875, Congress "set apart and reserved for the use and support of a state university" seventy-two sections of public lands. The Constitution of Colorado, adopted in 1876, made the "University at Boulder" an institution of the State, thus entitling it to the lands appropriated by Congress, and provided for its management and control, as follows: "The Board of Regents shall have the general supervision of the University, and the exclusive control and direction of all funds of, and appropriations to, the University". The University is supported by the proceeds of a fractional mill tax and by special appropriations.

The Institution was opened September 5, 1877, with two departments, Preparatory and Normal. After a few years the Normal department was dropped, and in 1907 the Preparatory department was discontinued. The University comprises the following schools and colleges: College of Liberal Arts, 1878; School of Medicine, 1883; Graduate School, 1892; School of Law, 1892; College of Engineering, 1893; Summer Session, 1904; College of Commerce, 1906; College of Education, 1908; College of Pharmacy, 1911; University

Extension Division, 1912; and School of Social and Home Service, 1912, changed to the College of Home Economics and Social Service in 1918.

SITUATION

The University is situated at Boulder, a city of 12,000 inhabitants, about thirty miles north from Denver. The Denver and Inter-urban Railway, with hourly electric service, and the Colorado and Southern and Union Pacific railways connect Boulder and Denver.

BUILDINGS AND GROUNDS

The University campus comprises sixty acres; Stratton Field, northeast of the main campus and about one-quarter mile distant, twelve acres. The University buildings are Heating, Lighting and Power Plant, Macky Auditorium, Library, Woodbury Hall, Women's Building, Men's Building, Gymnasium, President's House, Liberal Arts Building, Hale Science Building, Chemistry Building, New Science and Museum Building, Engineering Building, Shops Building, Medical Building, Henry S. Denison Memorial Building, Hospital, Nurses' Home, Isolation Hospital, Simon Guggenheim Law Building, Pharmacy Building. Of these, eighteen have been erected by the State, and the Macky Auditorium, the Henry S. Denison Memorial Building, and the Simon Guggenheim Law Building have been erected by private benefaction. For the use of the third and fourth years of the School of Medicine, a building located at Thirteenth and Welton Streets, Denver, is rented.

LIBRARY

The Library numbers 108,827 bound volumes, 27,000 pamphlets, and 1,800 maps. Direct access to the shelves is the rule. The main library is open to all during term time from 7:45 a. m. to 10:00 p. m., week days, except Friday and Saturday, when the closing hour is 9:00 p. m. Vacation hours are 9:00 a. m. to 5:00 p. m., week days.

The main library occupies the central portion of the Library Building; 79,300 books are shelved within its walls. Three hundred people may be seated at the different reading tables at one time. A card catalogue numbering upwards of 223,000 cards, giving authors and subjects, directs seekers to books or portions thereof.

Departmental libraries are maintained for Biology, Chemistry, Denison Research Laboratory, Education, Engineering, Geology, German, Law, Mathematics, Museum, Music, Pharmacy, Physics, and

School of Medicine (Denver). Through this system over 29,500 volumes upon special subjects are deposited in the building where the particular subject is taught.

Through library extension, books not in actual demand for resident use may be borrowed by citizens of Colorado.

ENTRANCE

Persons intending to enter the University must present their credentials to the Registrar before registration. Certificates from accredited high schools, signed by the proper authorities and indicating the character and extent of the work completed, are accepted. Certificates of the New York State Board of Regents and similar bodies and of the College Entrance Examination Board and credits of a non-accredited high school may be accepted provisionally, full standing being conditional on the subsequent work of the student concerned.

Students seeking advanced standing must present in addition to the above an official record of their college or university work, a marked catalogue, and a letter of honorable dismissal from the institution last attended. Real equivalents will be accepted. Advanced standing will not be definitely determined until the student has completed at least one semester's work in this University.

No statement of the entrance status of an applicant can be given by the Registrar until he has before him complete credentials.

Students are earnestly advised to be present at the opening of a semester. In the School of Medicine no student will be allowed to enter later than the second Monday after the opening of the University.

An information bureau for the convenience of new students may be found in the Registrar's office in the Macky Auditorium. The rooms of the Christian Associations, and of the Women's League are open for the reception of students during the opening days of the University.

The Registrar's office is open for registration, beginning Friday morning preceding the opening day of the University. All students are requested to register as soon as possible. Students continuing work in the department in which they have been previously enrolled, register first with the Dean and then with the Registrar. New students, and old students transferring from one department to another, register first in the Registrar's office.

REQUIREMENTS FOR ADMISSION

THE COLLEGE OF LIBERAL ARTS. COLLEGE OF COMMERCE. COLLEGE OF EDUCATION. AND COLLEGE OF HOME ECONOMICS AND SOCIAL SERVICE

Candidates for admission are expected to be graduates of a standard four-year high or preparatory school and *must present fifteen acceptable units*. Applications from candidates who have completed an equivalent amount of work under other conditions will be considered on the merits of each case; in general, such candidates will be expected to pass entrance examinations.

Certificates of moral character may be required from all applicants.

Entrance conditions will not be allowed beyond one unit, and then only upon recommendation of the principal of the school from which the candidate graduated. This applies to all students, including graduates of commercial and other courses wherein some of the subjects are not accepted for University matriculation.

Candidates with fifteen acceptable units, coming from a standard four-year high or preparatory school, who are not graduates, may be admitted on the recommendation of the principal.

A unit course of study is defined as a course covering a school year of not less than thirty-six weeks, with five periods of at least forty-five minutes each per week, two periods of Manual Training or Laboratory work being equivalent to one period of classroom work. This is equivalent to one hundred and eighty actual "periods" per unit. The fifteen units are equivalent to thirty "points".

The fifteen units should be distributed as follows:

Mathematics	2
Languages other than English.....	4
English	3
History	2
Science	2
Electives	2

—
15

Electives may be chosen from the following: Mathematics, 2; Greek, 2; Latin, 2; French, 2; German, 2; Spanish, 2; History, 2; English, 1; Science, 2; Psychology, ½. From the following group, subject to special accrediting by the University, not more than three units: Drawing, 1; Manual Arts, 2; Domestic Science, 1; Agricul-

ture (Introductory Science), 1; Commercial Geography, $\frac{1}{2}$; Commercial Law, $\frac{1}{2}$; Elementary Economics, $\frac{1}{2}$.

Students who do not present the units specified in the above table of requirements for admission, but who do present fifteen acceptable units, will be regularly admitted. Such students will, however, be required to elect in College courses that will fulfill the requirements specified, e. g., if a student enters with but two units of Language other than English, then he must include in his College course the equivalent of two units in foreign language. This provision materially widens the scope of electives that will be accepted for College entrance.

1. Half units will not be accepted in Physics and Chemistry.
2. Students who present three units of Greek are required to present only one unit of Science, but they must have a total of fifteen units.
3. For the foreign language requirement not more than two languages can be presented. Four units of Latin are preferred, at least two units urgently advised.

Special Students.

Persons of mature years, even if they are unable to meet the entrance requirements, may be admitted to certain courses on the approval of the departments concerned and the Committee on Courses. In no case will applications be considered from persons who are not twenty-one years of age. Students should not actually come to the University in the hope of entering as special students unless they have been assured *in writing* by the Registrar that there is a reasonable prospect of their being admitted.

THE COLLEGE OF ENGINEERING

Candidates for admission are expected to be graduates of a standard four-year high or preparatory school, or to have completed a corresponding amount of work under other conditions.

While the regular time for entrance to the College of Engineering is the opening of the first semester, the subjects are repeated in such a manner that students entering at the opening of the second semester may proceed with their work without loss of time.

Students may be admitted on the passing of satisfactory examinations or on the presentation of certificates from an accredited high school. Applications from graduates of a non-accredited school

will be considered as the merits of each case may warrant; but full standing in such instances shall be conditional upon the subsequent work of the student concerned.

Certificates of moral character may be required from all applicants for admission.

Fifteen units are required for admission. Entrance conditions will not be allowed beyond the equivalent of two units. For definition of "unit," see page 27.

The fifteen units should be distributed as follows:

Mathematics (Algebra, Plane and Solid Geometry)....	3
Languages other than English.....	2
English	3
History	2
Physics	1
Electives	4
	—
	15

Electives may be chosen from the following: Mathematics, 2; Greek, 3; Latin, 3; French, 3; German, 3; Spanish, 3; History, 2; English, 1; Science, 3; Civics, 1; Economics, ½; Psychology, ½. From the following group, subject to special accrediting by the University, not more than three units: Drawing, 2; Manual Training, 2; Agriculture (Introductory Science), 1; Commercial Geography, ½; Stenography, 1; Bookkeeping, 1; Commercial Law, ½. While Chemistry is not required for entrance, it is very desirable that students take this course in high school.

Special Students.

Mature candidates, more than twenty-one years of age, who have had satisfactory preparation in algebra, geometry, physics, and English may be admitted as special students. Special students pursue the regular course and are required to remove their entrance deficiencies within two years. No one may enroll in the College of Engineering as a special student for more than two years except on the approval of the Dean and a vote of the Faculty.

THE GRADUATE SCHOOL

Graduates of any college or scientific school of equal rank with the University of Colorado are admitted upon presentation of certificates of graduation. Students from other institutions should present their credits to the Registrar for rating. See also, page 181.

THE SCHOOL OF MEDICINE

Candidates for admission must fulfill the entrance requirements of the College of Liberal Arts, as given in detail on page 27, and present in addition two years of college work, estimated at sixty semester hours, in addition to the required physical education or military training. The following subjects are prescribed: At least one year of Latin, one year each of college chemistry, physics, biology, French or German, and six hours of English Composition. It is recommended that candidates present in addition courses in organic chemistry and quantitative analysis.

BEGINNING WITH THE SESSION OF 1918-1919, NO STUDENTS WITH ENTRANCE CONDITIONS WILL BE ADMITTED.

Beginning with 1919 a college course in organic chemistry will be one of the courses required for admission.

Not more than thirty students will be admitted to any class.

Students are earnestly advised to be present at the opening of the session. For the session of 1918-1919 no student will be allowed to enter later than Monday, September 23, 1918.

Special Students.

Mature students, not candidates for the degree of M.D., who can give satisfactory evidence of their qualifications to pursue certain advanced courses, may be admitted as special students. No student should come to the University with the expectation of entering as a special student unless he has been previously assured *in writing* by the Registrar that there is a reasonable prospect of his being admitted.

THE SCHOOL OF LAW

Candidates for admission must fulfill the entrance requirements of the College of Liberal Arts, as given in detail on page 27, including at least two units of Latin; and present in addition, two years of college work estimated at sixty semester hours, in addition to the required physical education or military training. The college work must include a thorough course in English Political or Constitutional History, and the equivalent of at least five hours of English Composition and Rhetoric.

All candidates must present certificates of good moral character.

Special Students.

Persons twenty-three years of age, who cannot satisfy the admission requirements but are qualified to pursue special work, may

be admitted to certain courses, though not as candidates for a degree, on approval of the proper committee of the faculty. Special students may be excluded at any time after entrance for unsatisfactory class work. Students should not actually come to the University in the hope of entering as special students unless they have been assured *in writing* by the Registrar that there is a reasonable prospect of their being admitted.

THE COLLEGE OF PHARMACY

Candidates for admission are expected to be graduates of a standard four-year high or preparatory school and *must present fifteen acceptable units*. Applications from candidates who have completed an equivalent amount of work under other conditions will be considered on the merits of each case; in general, such candidates will be expected to pass entrance examinations.

Certificates of moral character may be required from all applicants.

Entrance conditions will not be allowed beyond one unit and then only upon recommendation of the principal of the school from which the candidate graduated. This applies to all students including graduates of commercial and other courses wherein some of the subjects are not accepted for University matriculation. Entrance conditions must be removed before entering upon the work of the second year.

Candidates with fifteen acceptable units, coming from a standard four-year high or preparatory school, who are not graduates, may be admitted with the consent of the principal.

For definition of "unit," see page 27.

The fifteen units should be distributed as follows:

Mathematics	2
Latin	1
English	3
History	2
Science (one unit of Chemistry required).....	2
Electives	5

15

Electives may be chosen from the following: Mathematics, 2; Greek, 2; Latin, 3; French, 2; German, 2; Spanish, 2; History, 2; English, 1; Science, 2; Psychology, $\frac{1}{2}$. From the following group,

subject to special accrediting by the University, not more than three units: Drawing, 1; Manual Arts, 2; Domestic Science, 1; Agriculture (Introductory Science), 1; Commercial Geography, $\frac{1}{2}$; Elementary Economics, $\frac{1}{2}$; Commercial Law, $\frac{1}{2}$; Bookkeeping, $\frac{1}{2}$.

Half units will not be accepted in Physics and Chemistry.

Special Students.

Persons twenty-one years of age, who cannot satisfy the admission requirements but are qualified to pursue special work, may be admitted to certain courses on approval of the proper committee of the faculty. Students should not actually come to the University in the hope of entering as special students unless they have been assured *in writing* by the Registrar that there is a reasonable prospect of their being admitted.

ACCREDITED SCHOOLS*

Akron	Colorado City	Grand Junction:
(Washington	Colorado Springs	Fruitvale
County)	Cripple Creek	Grand Junction
Alamosa	Debeque	Greeley
Arvada	Delta	Gunnison (Gunnison
Aspen	Denver:	County)
Berthoud	East Side	Gypsum
Boulder (State	Manual Training	(Eagle County)
Preparatory)	North Side	Holly (Union)
Breckenridge	South Side	Holyoke (Phillips
Brighton	West Side	County)
Brush (Union)	The Wolcott School	Hotchkiss
Buena Vista	Durango	Idaho Springs
Canon City:	Eaton	Julesburg (Sedg-
Canon City	Florence	wick County)
South Canon	Fort Collins	Lafayette
Castle Rock	Fort Morgan	La Junta
(Douglas County)	Fowler	Lamar (Union)
Central City	Fruita (Union)	La Porte (Cache
(Gilpin County,	Georgetown	La Poudre)
Union)	Glenwood Springs	Las Animas (Bent
Cheyenne Wells	(Garfield County)	County)
(Cheyenne	Golden	Leadville
County)		Littleton

* Alphabetically by postoffices.

Longmont	Palisades:	Salida
Loveland	Mount Lincoln	Silverton
Mancos	Palisade	Sterling (Logan
Manitou	Paonia	County)
Meeker (Rio Blanco	Pueblo:	Telluride
County)	Centennial (Dis-	Trinidad
Monte Vista	trict No. 1)	Victor
Montrose (Montrose	Central (District	Walsenburg (Huer-
County)	No. 20)	fano County)
Ouray (Ouray	Rifle (Union)	Wheatridge
County)	Rocky Ford	Windsor
	Saguache (Saguache	Wray (Yuma
	County)	County)

TUITION AND FEES*

INCIDENTAL FEE.

Annual fee for all students in all the colleges and schools (except the Denver Division of the School of Medicine, \$3.00).....\$ 6.00

COLLEGES OF LIBERAL ARTS, COMMERCE, EDUCATION, AND HOME ECONOMICS AND SOCIAL SERVICE.

Matriculation (paid once).....\$ 5.00

Tuition, resident, per year..... 15.00

Tuition, non-resident, per year..... 25.00

Laboratory fees, collected *each semester* from students who take the particular courses. [These fees include breakage deposits, etc., as well as charges for material.]

Physics, all laboratory courses, 25 per cent. returnable at end of course..... 4.00

Chemistry (Lecture hours are not counted):

General Inorganic, per credit hour, 25 per cent. returnable 4.00

Qualitative Analysis, per credit hour, 25 per cent. returnable 4.00

Organic Preparations, per credit hour, 25 per cent. returnable 4.00

All other courses, per credit hour, 25 per cent. returnable 2.50

* Special breakage charges may be collected whenever necessary in any laboratory department of the University.

Biology:

Botany, five hour course.....	\$ 2.50
Botany, three hour course.....	2.00
Botany, two hour course.....	1.50
Zoology, five hour course.....	3.50
Zoology, three hour course.....	3.00
Zoology, two hour course.....	2.50

Education:

Pedagogical library fee for each pedagogical course requiring duplicate books.....	1.00
Teacher's registration fee	1.00

Psychology:

Experimental Psychology	1.00
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Geology:

General Geology, per year, 25 per cent. return- able	5.00
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Mineralogy:

Economic Mineralogy, 25 per cent. returnable.	4.00
Advanced Mineralogy, 25 per cent. returnable..	2.00
Fire Assaying, 25 per cent. returnable.....	6.00

Geography:

Physiography, for field trips and maps, unused part returnable	5.00
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Home Economics:

Garment Making	1.00
Dressmaking	1.00
Elementary Foods	3.00
Selection and Preparation of Foods.....	5.00
Principles of Cookery.....	5.00

COLLEGE OF ENGINEERING.

Matriculation (paid once)	5.00
Tuition, resident, per year.....	15.00
Tuition, non-resident, per year.....	25.00
For laboratory fees in Engineering courses, see page 137.	

GRADUATE SCHOOL.

Matriculation (not required of graduates of this University or of instructors, paid once).....	10.00
Diploma fee	10.00
Tuition, per year, for courses in Ophthalmology.....	30.00

DEPARTMENT OF PREVENTIVE AND EXPERIMENTAL MEDICINE.

Matriculation	\$ 5.00
Tuition	15.00
Laboratory fees, per semester hour (not including expenses of field trips) .....	.50
Diploma fee	10.00

SCHOOL OF MEDICINE.

Tuition, resident, per year.....	75.00
Tuition, non-resident, per year.....	100.00
Laboratory deposit, per semester, paid by all first and second year students to cover breakage and excessive and unreasonable use of material.....	10.00

SCHOOL OF LAW.

Tuition, per year	50.00
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COLLEGE OF PHARMACY.

Matriculation (paid once)	5.00
Tuition, resident, per year	15.00
Tuition, non-resident, per year.....	25.00
Laboratory fees in Pharmacy per credit hour of laboratory work, 25 per cent. returnable.....	5.00
Physiology, 25 per cent. returnable.....	5.00
Pharmacology, 25 per cent. returnable.....	10.00
For fees in other courses see Chemistry, Botany, etc.	

SUMMER SESSION.

For Summer Session fees, see page 252.

EXTENSION FEES.

For Extension fees see pages 266, 267.

NOTE—Matriculation fees will not be refunded. Students withdrawing from the University will be charged 10 per cent. of the annual tuition and incidental fees for each week of attendance in the Colleges of Liberal Arts, Engineering, and Pharmacy, and 5 per cent. in the Schools of Law and Medicine. No refunds will be made in the Graduate School after the second week of attendance. Students entering for one semester will be charged only 60 per cent. of the tuition fee and 50 per cent. of the incidental fee.

LIVING EXPENSES

The average price of board, room, light, and fuel may be placed at from \$6.50 to \$12.00 a week. Day board in boarding houses and

city restaurants varies from \$5.00 to \$8.00 a week. The rent for furnished rooms varies from \$6.00 to \$15.00 a month. As a rule a room costing more than \$8.00 a month may be occupied by two students. Facilities for light housekeeping enable students to lessen expenses materially. Boarding clubs are organized and are open to new students.

The following table shows the estimated annual expenses of students of the University, excluding clothing and traveling expenses; the expense varies with the course pursued, and also depends, naturally, upon the tastes and habits of the individual.

Board	\$180.00 to \$288.00
Room	40.00 to 108.00
Books, instruments, and stationery.....	10.00 to 60.00
Laundry	9.00 to 36.00
Tuition and fees.....	21.00 to 116.00
Incidentals	18.00 to 50.00
	<hr/>
	\$278.00 to \$618.00

The items for books and fees are high in the second table because they are estimated on the basis of a liberal allowance for students in the Schools of Medicine and Law.

The University has no dormitories and no boarding facilities. (See page 39.)

Information concerning the location of rooming and boarding places may be had at the office of the Registrar or from the secretaries of the University Christian Associations. Women students should consult also the Dean of Women. Inquiries concerning expenses should be directed to the Registrar.

EMPLOYMENT

While the University does not undertake to find employment for students, yet every assistance possible is given by University officers. The Registrar cooperates with the secretaries of the two Christian Associations, each of which conducts an employment bureau.

No general information can be given concerning employment because the personal capacity, efficiency, and energy of the student concerned and the time which he can devote to outside work are controlling factors.

Prospective students should not come to the University unless they have, at the time of entering, enough money to pay a reasonable part of the first semester's expenses. A few students are able to earn enough money to pay all of their expenses, but the attempt to do this frequently involves a sacrifice of health or scholarship.

Inquiries concerning employment should be directed to the Registrar.

SCHOLARSHIPS

HIGH SCHOOL HONOR SCHOLARSHIPS

Scholarships, consisting of a remission of the annual tuition (\$15.00) for four years in the Colleges of Liberal Arts, Engineering, and Pharmacy, are granted to graduates of four-year high schools of Colorado, upon recommendation of the principal, according to the following plan:

To graduating classes of ten or less one scholarship to either the first or second in rank; to classes of from ten to twenty-five, one scholarship to one of the first three in rank; to classes of twenty-five to fifty, two scholarships to any of the first six in rank; to classes of fifty to one hundred, three scholarships to any of the first nine in rank; to classes of over one hundred, four scholarships to any of the first twelve in rank.

A scholarship is forfeited whenever the student's yearly average falls below 80 per cent.

THE EDWARD G STOIBER SCHOLARSHIP

The Edward G. Stoiber Scholarship Fund consists of the principal sum of \$2,000 held in trust, the income of which is given each year to some student in the School of Medicine, designated by the donor or by the officers of the School. This scholarship was established in The Denver and Gross College of Medicine by Mrs. Edward G. Stoiber in memory of the late Edward G. Stoiber. Under the terms of the merger agreement between The Denver and Gross College and the University of Colorado this fund has been transferred to the Regents, to be held in perpetuity for the purposes specified.

THE GARDINER-ODELL SUMMER SCHOLARSHIP IN BIOLOGY

The late Mrs. Maud Gardiner Odell, B.S., 1894, through her daughter, Dorothy Gardiner, A.B., 1917, left to the University \$1,000 for the Biology department. The sum will be invested in Liberty Bonds and the annual income used for a Summer scholarship. The

student accepting this scholarship must pursue work in botany or zoology during the Summer, and it should be, preferably, work of a nature that can be best done in the Summer months. Applications are to be made to the Professor of Biology before April 1 of any year. The first award will be made in 1919.

PRIZES

THE BENNETT PRIZE

The Bennett prize is awarded annually at Commencement for the best essay on *The Principles of Free Government*. Any student in the University may compete. The prize awarded is the income of the sum of \$400 presented to the Regents of the University by Hon. William J. Bryan, Trustee for Philo Sherman Bennett.

LOAN FUNDS

WOMEN'S LEAGUE LOAN FUND

This fund consists of the principal sum of about \$1,500. Loans are made to women students by the officers of the Women's League.

THE WILLIAM PORTER HERRICK MEMORIAL FUND

This fund, the gift of Mrs. Ursula D. Herrick in memory of her husband, the late William Porter Herrick, consists of the principal sum of \$5,000. The proceeds of this fund are awarded by the Regents of the University "in aid of such worthy and promising undergraduate students of the University, of either sex, as the President of said University may from time to time designate; provided, however, that no student who uses tobacco in any form, or who uses intoxicating liquors of any kind as a beverage shall participate in the benefits of this fund".

UNIVERSITY HOSPITAL

The University Hospital provides hospital advantages for students of the University. A flat rate of \$10.00 a week is made for students in the general wards, and \$15.00 a week in the isolation hospital. For further information concerning the University Hospital, see page 225.

SUPERVISION OF WOMEN STUDENTS

DEAN OF WOMEN

The Dean of Women directs the interests of women students. She regulates social activities for both men and women and is a

member of the faculty committee which has direction over all student organizations and extra-curricular activities. The houses in which women room and board are under her supervision.

HOMES FOR WOMEN

Since there is no residence hall for women under the management of the University, suitable homes are provided in private families and in rooming houses. No woman student is allowed to live in any rooming house which is not on the University list accredited by the Dean of Women.

HEALTH OF WOMEN

The health of the women students is under the supervision of the Dean of Women and the Medical Adviser to Women in cooperation with the Department of Physical Education. The Medical Adviser is a woman physician. A medical and physical examination, given by the Medical Adviser and the Director of Physical Education for Women, is required of all women taking work in Physical Education. A series of lectures on personal and social hygiene is required of all freshmen women and is open to all other women students. In the University Hospital provision is made for the care of students of the University. See page 225.

WOMEN'S BUILDING

The Women's Building furnishes headquarters for the women of the University. Here are the offices of the Dean of Women, the Women's League, and the Young Women's Christian Association. There is a hall for meetings and entertainments.

WOMEN'S LEAGUE

The Women's League is an association composed of the undergraduate women of the University, of alumnæ, and of the wives of members of the faculties. Its purpose is two-fold: first, to promote the intellectual and social welfare of the women of the University; and second, to establish a loan fund for the benefit of women students.

VOCATIONAL GUIDANCE

Instruction concerning vocations open to women and concerning University courses leading to such vocations is given at least once a month during the college year. This instruction is given through lectures by experts and through personal interviews con-

ducted by the Secretary of the Collegiate Bureau of Occupations, which has been established by the Denver Chapter of the Association of Collegiate Alumnae.

MILITARY SCIENCE AND TACTICS

An infantry unit of the Reserve Officers' Training Corps, Senior Division, is maintained in the University under the supervision and direction of an officer of the United States Army, detailed by the War Department.

Military training is required of all male students in the first and second years in the Colleges of Liberal Arts, Engineering, and Pharmacy. The advanced courses of the Reserve Officers' Training Corps may be elected by students in the third and fourth years.

For description of courses see page 99.

STUDENT ASSEMBLY

The period from 11:00 to 12:00 on Tuesday is set apart for assembly of students. During this period no class or lecture work is conducted. A brief address is given by a member of the faculty or by some speaker invited for the occasion. Attendance is required.

UNIVERSITY PUBLICATIONS

1. Catalogue, published in March, containing general information about the University and its separate departments.

2. Summer Session Announcement, published in February.

3. The special announcements of the departments of Medicine, Law, Engineering, and Pharmacy, published in June.

4. The biennial report of the Regents of the University, recording the progress of the Institution during the previous biennial period, and showing the University budget of receipts and expenditures for the same period, published biennially in October.

5. The University of Colorado Studies, published at irregular intervals, and containing original contributions by members of the University faculties.

6. University Extension Bulletins on various subjects of investigation.

7. The Booklet of Views, containing half-tone cuts of the buildings and grounds.

These publications may be obtained by application to the Registrar of the University.

STUDENT AND ALUMNI PUBLICATIONS

The Silver and Gold, a semi-weekly paper, named after the University colors, is published by the students.

The Coloradoan, an annual, is published annually by the Associated Students.

The Colorado Engineers' Magazine is published quarterly by the students of the College of Engineering.

The University of Colorado Handbook is published annually by the Christian Associations.

The Colorado Alumnus, issued monthly, is the official publication of the Associated Alumni.

The Journal of Engineering, a quarterly, is published by the alumni and the students of the College of Engineering.

UNIVERSITY SCIENTIFIC SOCIETY

The University Scientific Society affords a common meeting ground for all those interested in scientific subjects. Regular meetings, open to the public, are held every Monday evening at eight o'clock. The papers read before these meetings are intended to set before the members some of the results of modern investigation in literature, art, history, and science.

ASSOCIATED STUDENTS

The student body is organized into an association known as "The Associated Students of the University of Colorado". Through this Association the students act collectively in all their University relations. There are eight executive boards—the Commission, the Men's Athletic Board, the Women's Athletic Board, the Debating Board, the Board of Publications, the Financial Board, the Dramatic Board, and the General Board. The membership of these boards consists of faculty representatives appointed by the President of the University and student members elected by the students. The Commission controls general interests. The General Board has charge of all insignia, interprets the Constitution and proposes and ratifies amendments thereto, and employs and controls the general manager who has direct control of, and responsibility for, every student enterprise of general interest. The other boards cooperate with the general manager and determine the policy that shall be followed by him in the respective activities indicated by their names. By the payment of a \$6.00 fee any student, alumnus, or member of the faculties is

entitled to admission to all local contests, games, or other events under the Association's auspices. Provision is made in the Constitution for a careful supervision of student funds, for the recall of any officers, and for the initiative and referendum.

ORATORICAL AND DEBATING INTERESTS

All public debates and oratorical contests are held under the management of the Debating Board of the Associated Students. This board consists of three faculty and three student members.

Annual debates are held with four other state universities. The teams for these debates are chosen by contest. The teams and alternates constitute a squad of twenty men, who are under the direct supervision of the instructor in debating.

The A. S. U. C. conducts each year a contest in oratory in which cash prizes are offered.

ATHLETICS

The University aims, primarily, to stimulate interest in the greatest possible variety of athletics for both men and women, with suitably graded exercises for all students; and, secondarily, to develop highly specialized intercollegiate sports for men. Walking and mountain climbing are popular forms of recreation, and the climate is such as to permit out-of-door exercise during most of the year.

Athletics are placed upon a stable financial foundation under the organization of the Associated Students of the University. General supervision and direction of athletics for men is vested in the Athletic Board, and for women in the Women's Athletic Board. These Boards are each composed of three members of the faculty, appointed by the President of the University, and three student members, who are officials of the Associated Students. The Boards are responsible in all things to the University Senate. All students who participate in athletics are required to take a medical and physical examination.

ATHLETICS FOR MEN

The following branches of organized athletics are offered for men: Football, baseball, basketball, soccer football, tennis, rifle shooting, cross-country running, track and field sports, with intercollegiate, interclass, and interfraternity competition.

The University has a chapter of the national athletic society, Sigma Delta Psi, membership in which is open to men who successfully complete fourteen athletic requirements.

ATHLETICS FOR WOMEN

The following branches of organized athletics are offered for women: Basketball, baseball, captain ball, volley ball, tennis, archery, and track. Annual tournaments are held in tennis and archery, and interclass games are played in basketball and baseball. A field day of women's athletics is held biennially.

WOMEN'S ATHLETIC ASSOCIATION

The Women's Athletic Association is composed of all women students of the University. The object of this Association is to promote and further the interests of intra-mural athletics for women, thereby furthering health, democracy, and sportsmanship in the student body. In addition to the regular sports the association organizes tramps each week-end, for which athletic points are given.

MUSICAL ORGANIZATIONS

The University Glee and Mandolin Clubs are open to men of the University. Members are selected by competitive examination. A tour is made each year.

The University Orchestra is open to students and members of the faculty desiring to study standard orchestral works.

The University Band furnishes music for the various general University functions.

The Women's Instrumental Club is open to women of the University.

All musical organizations are under the direction or general supervision of the Professor of Music.

RELIGIOUS ORGANIZATIONS

Y. M. C. A. AND Y. W. C. A.

The Young Men's Christian Association and the Young Women's Christian Association have organizations in the University, which are open to members of the faculties and to students of all departments.

Religious services and meetings for the presentation of the moral and religious problems of the day are held by each Associa-

tion. Classes for the study of the Bible and world-wide missions are conducted by each under competent leadership. Vesper services are held in the Chapel. In providing frequent social gatherings the Associations render important service.

Resident secretaries are employed by the Associations, and their services are at the disposal of prospective students and their friends. A copy of the Students' Handbook, which is issued by the Associations and is descriptive of life at the University, is sent upon request.

The Y. W. C. A. conducts a board and room register, a book exchange, and a self-help bureau for the women at the opening of each school year. The Y. W. C. A. offices are in the Women's Building and are open at all times to the women of the University.

The Y. M. C. A. has offices in Woodbury Hall. Permanent employment bureau, information bureau, and headquarters for men are maintained here. The Student and Faculty Directory is published by the Y. M. C. A.

NEWMAN SOCIETY

The Newman Society is the local branch of the Catholic Students' Association of America. Membership is open to all Roman Catholic students. Its purposes are both religious and social.

HONOR SOCIETIES

Four honor societies, to which students of high scholastic standing are eligible, have chapters at the University of Colorado. Phi Beta Kappa elects to membership senior students in the College of Liberal Arts. Sigma Xi offers membership to graduate and undergraduate students who have shown special ability in scientific investigations. Tau Beta Pi is a technical society, selecting members from students in the College of Engineering. Kappa Delta Pi elects to membership students in the College of Education.

STUDENT LITERARY SOCIETIES AND CLUBS

Literary societies and debating clubs are organized and conducted each year by the students.

The Scribblers' Club aims to develop talent in original literary work. Meetings are held every two weeks, the programs consisting entirely of poems, essays, sketches, or stories written by the members. Membership is open to both men and women.

The Sketch Club aims to stimulate interest in art. The club meets twice a week and the members draw from the live model and from casts. Membership is limited to twenty. Candidates are expected to submit drawings.

The University of Colorado Debating Society was organized for the purpose "of cultivating a correct mode of speaking and qualifying its members by practice to express their opinions in public in a correct manner". The Society spends most of its time in senate and parliamentary practice. Membership is open to men of the University who are interested in debating and oratory.

The E. V. U. Debating Club was organized for the purpose of increasing the opportunities for training in public speaking and parliamentary law at the University. Joint debates are carried on with the University of Colorado Debating Society. Membership is open to men of the University.

The Scoop Club limits its membership to students who have had experience in newspaper reporting.

The Civic Club, composed of students interested in political and governmental problems, is a member of the Intercollegiate Civic League. This club publishes the Civic Quarterly.

Le Cercle Français is an informal club which meets every two weeks for the purpose of obtaining practice in the French language, which is used exclusively. Plays are read and performed, various games are played, and the work of the classroom is supplemented in every possible way.

El Circulo Español, like Le Cercle Français, meets every other week. The object of the club is the same, to acquire practice in the spoken language and to stimulate interest in things Spanish. The meetings of the two clubs do not conflict.

The University of Colorado Menorah Society is a member of the Intercollegiate Menorah Association. Its object is the study and advancement of Jewish culture and ideals. Membership is open to any student of the University interested in these subjects.

The Players' Club is organized for the purpose of promoting dramatic study and gives one or more public presentations during the year.

The Colorado University Chapter of The Intercollegiate Socialist Society aims to promote an intelligent interest in Socialism.

The Civil Engineers' Society, the Electrical Engineers' Society—a student branch of the American Institute of Electrical Engineers,

and the University of Colorado branch of the American Society of Mechanical Engineers have been organized by the students in the College of Engineering. These societies meet every two weeks. In each original papers on questions of technical interest are presented and discussed. These three societies joined as "The Associated Engineering Societies" publish the Journal of Engineering. The Colorado Engineers' Magazine is published by the students of the College of Engineering.

ASSOCIATED ALUMNI

The Associated Alumni of the University of Colorado is composed of all the graduates of the University of Colorado and of all other persons who have been in residence at the University of Colorado for at least one year, as members of the faculty, officers or students. The organization aims to promote the best interests of the University of Colorado and to unite the alumni for mutual advantage. In furtherance of these objects it maintains a permanent secretary in Boulder and publishes a monthly magazine known as "The Colorado Alumnus". The legislative and executive powers are vested in the Alumni Senate, which is made up of senators elected from the alumni at large, and representatives of the nineteen local alumni organizations in the principal towns and cities of Colorado and in many cities in other states. The Alumni Senate meets in Boulder in October on the Annual Home-Coming Day, and in June at Commencement.

TEACHERS APPOINTMENTS OFFICE

The Teachers Appointments Office makes every effort to place students and graduates of the University in the positions for which their general education and professional preparation have fitted them. The office, which is conducted by a secretary under the general supervision of a Senate Committee on Recommendation of Teachers, maintains communication with superintendents and boards of education with reference to vacancies, and invites correspondence from school authorities who are in need of professionally trained teachers. Students of the University, who intend to teach, and graduates of the University, who are now engaged in teaching and who wish to secure better positions, should register with the secretary of the committee.

HIGH-SCHOOL DAY

The observance of High-School Day has been made one of the regular features of the academic year. The purpose is to afford to the senior students of the high schools an opportunity of visiting the State University, inspecting its buildings and grounds and so far as possible learning the scope and spirit of its life and work.

On this day the Interscholastic Oratorical and Essay Contests, and the final debate of the Interscholastic Debating League, are held at the University.

COLLEGE OF LIBERAL ARTS

FACULTY

*LIVINGSTON FARRAND, A.M., M.D., LL.D., President of the University.
GEORGE NORLIN, Ph.D., Acting President of the University; Professor of Greek.

FRED B. R. HELLEMS, Ph.D., LL.D., Dean; Professor of Latin.
J. RAYMOND BRACKETT, Ph.D., Dean of the Graduate School; Professor of Comparative and English Literature.

IRA M. DELONG, A.M., LL.D., Professor of Mathematics.

CHARLES C. AYER, Ph.D., Professor of Romance Languages.

FRANCIS RAMALEY, Ph.D., Acting Dean of the College of Pharmacy; Professor of Biology.

†MELANCHTHON F. LIBBY, Ph.D., Professor of Philosophy.

JOHN BERNARD EKELEY, Ph.D., Sc.D., Professor of Chemistry.

RUSSELL D. GEORGE, A.M., Professor of Geology.

THEODORE D. A. COCKERELL, Sc.D., Professor of Zoology.

GEORGE M. CHADWICK, Professor of Music.

JAMES F. WILLARD, Ph.D., Professor of History.

OLIVER C. LESTER, Ph.D., Professor of Physics.

FRANK E. THOMPSON, A.B., Director of the College of Education; Professor of Education.

JUNIUS HENDERSON, A.B., Curator of Museum; Professor of Natural History.

JOHN S. McLUCAS, A.M., Professor of English.

GRACE VAN SWERINGEN BAUR, Ph.D., Professor of Germanic Languages.

MILO G. DERHAM, Ph.D., Director of the Summer Session; Professor of Latin.

LAWRENCE W. COLE, Ph.D., Director of the College of Home Economics and Social Service; Professor of Psychology.

LORAN D. OSBORN, Ph.D., Director of the Extension Division; Professor of Sociology.

* On leave of absence, June, 1917, to September, 1918, for war service.

† On leave of absence, second semester, 1917-1918.

FREDERICK A. BUSHEE, Ph.D., Director of the College of Commerce;
Professor of Economics and Sociology.

RALPH D. CRAWFORD, Ph.D., Professor of Mineralogy and Petrology.

*HARRY A. CURTIS, B.S. (Ch.E.), Ph.D., Professor of Physical Chemistry.

FRANK L. CLAPP, Ph.D., Professor of School Administration.

ARNOLD J. LIEN, Ph.D., Professor of Political Science.

JAMES A. MERRITT, Captain, U. S. A., Retired; Professor of Military Science and Tactics.

S. ANTOINETTE BIGELOW, A.M., Dean of Women; Assistant Professor of English Literature.

†C. HENRY SMITH, Ph.B., Librarian; Assistant Professor of Bibliography.

WILLIAM A. COOK, Ph.D., High-School Visitor; Assistant Professor of Education.

MAX M. ELLIS, Ph.D., Sc.D., Assistant Professor of Biology.

CARL C. ECKHARDT, Ph.D., Assistant Professor of History.

PHILIP G. WORCESTER, A.M., Assistant Professor of Geology.

WILLIAM F. BAUR, Ph.B., Assistant Professor of Germanic Languages.

JAY W. WOODROW, Ph.D., Assistant Professor of Physics.

PAUL M. DEAN, Ph.D., Assistant Professor of Chemistry.

HUGH C. PRYOR, A.M., Assistant Professor of Education.

GEORGE H. LIGHT, Ph.D., Assistant Professor of Mathematics.

THOMAS MAITLAND MARSHALL, Ph.D., Assistant Professor of History.

*JAMES N. ASHMORE, Director of Physical Education.

HELEN MASTERS BUNTING, Director of Physical Education for Women.

ELSIE S. PRATT, M.D., Medical Adviser to Women.

DONALD MCFAYDEN, B.D., Ph.D., Instructor in History.

LORENA UNDERHILL, A.M., Instructor in Philosophy.

RUTH M. SHELLEDY, A.M., Instructor in German.

JOHN H. V. FINNEY, B.S. (E.E.), Instructor in Physics.

‡JESSIE HUTSINPILLAR, A.M., Instructor in English.

MARIE SORENSON, A.M., Instructor in English.

CLARIBEL KENDALL, A.M., Instructor in Mathematics.

‡FRANCIS WOLLE, A.M., Instructor in English Literature.

* On leave of absence for war service.

† On leave of absence for war service, first semester, 1917-1918.

‡ On leave of absence, 1917-1918.

- *FLORENCE GALLIGAN JOSLYN, A.M., Instructor in Education.
DOROTHY M. BURTON, A.B., Instructor in English Literature.
†ERSKINE R. MYER, A.B., Instructor in English.
MAUD E. CRAIG, A.M., Instructor in Latin.
‡ARTHUR T. EVANS, A.M., Instructor in Biology.
‡EDWIN B. PLACE, A.M., Instructor in Romance Languages.
IRENE P. MCKEEHAN, A.M., Instructor in English.
§JAMES H. COWLES, A.B., Instructor in Life Insurance.
OSCAR A. RANDOLPH, Ph.D., Instructor in Physics.
GLADYS C. CURTIS, A.M., Instructor in Education.
ALICE DOWNING HUNTER, A.M., Instructor in English.
OLIN INGRAHAM, A.M., Instructor in Economics.
BEATRICE BOLAN, Instructor in Physical Education for Women.
ARTHUR CHAPMAN, Litt.M., Instructor in Journalism.
†ESBON Y. TITUS, Ph.D., Instructor in Chemistry.
JOHN RENNELL, Instructor in Art.
BESSIE R. GREEN, A.M., Instructor in Biology.
ARTHUR WILLIAMS, A.M., Instructor in Greek.
SUSAN BLAKEY, A.B., B.S., Instructor in Home Economics.
JOHN D. COOKE, A.M., Instructor in English Literature.
LAZARE B. ALSSID, A.B., Instructor in Romance Languages.
BRYANT SMITH, A.B., LL.B., Instructor in Debating.
MARY V. MCFARLAND, A.B., Instructor in Psychology.
RUSSELL N. LOOMIS, B.S. (Phar.), Instructor in Chemistry.
HORACE B. VAN VALKENBURGH, M.S., Instructor in Chemistry.
BENJAMIN D. CORNELL, A.B., Instructor in Chemistry.
BEN W. ROWLAND, A.B., Instructor in Chemistry.
¶ROBERT A. KLAHR, A.B., M.C.S., C.P.A., Instructor in Economics.
EVA M. BAUM, A.B., Instructor in Chemistry.
WANDA I. FRAIKEN, A.M., Instructor in English.
MELBOURNE C. EVANS, B.S., Instructor in Gymnasium.
**CLARA HISCOCK BRACE, A.B., Instructor in Education.
**HENRY M. SAYRE, Instructor in Accounting.
MAY SNYDER, A.B., Assistant in Romance Languages.
V. A. VAN DUZER, Assistant in Romance Languages.

* Resigned December 22, 1917.

† On leave of absence for war service.

‡ On leave of absence, 1917-1918.

§ On leave of absence for war service, second semester, 1917-1918.

¶ Died January 2, 1918.

** Second semester, 1917-1918.

*EDWIN D. HULL, M.S., Assistant in Biology.

†GLENWOOD C. ROE, A.B., Assistant in Biology.

‡BERTRAM JAFFA, A.B., Assistant in Biology.

W. WARREN HOWE, A.B., Assistant in Chemistry.

JAMES TERRY DUCE, A.B., Assistant in Geology.

RALPH HUBBARD, A.B., Assistant in the Museum and in Zoology.

LEROY A. MACCOLL, Assistant in Physics.

†BERNARD P. HEUBNER, A.B., Assistant in Education.

‡NEWTON J. RICE, A.B., Assistant in Education.

ARTHUR H. RHOLL, A.B., Assistant in Norwegian and German.

†FRIEDA MEENTS, A.B., Assistant in German.

*HAROLD P. MUNCK, A.B., Assistant in Economics.

WILBUR W. ADAMS, Assistant in Gymnasium.

* On leave of absence for war service.

† Resigned January 25, 1918.

‡ Second semester, 1917-1918.

EQUIPMENT

LABORATORIES

THE PHYSICAL LABORATORY—The Department of Physics occupies the entire first floor, two hundred feet by sixty feet, of the Hale Science Building, with a large modern lecture room on the second floor. The laboratories are large and well supplied with gas, water, direct and alternating current, and the ordinary apparatus for students' use. There are rooms for advanced and research work equipped with special apparatus particularly in light and electricity. A well equipped shop and a department library also add greatly to the efficiency of the department.

CHEMICAL LABORATORY—The basement of the Chemistry Building contains a laboratory for organic and physiological chemistry, a laboratory for food analysis, a laboratory for sanitary water analysis, and the main stock and acid room. On the first floor are the laboratories for general inorganic chemistry and for qualitative analysis, a private laboratory, a laboratory for quantitative analysis, a balance room, a combustion room, and the stock distributing room. The second floor contains the main lecture room with an amphitheatre seating two hundred and fifty students, the lecture desk being supplied with water, gas, suction pumps, draught, and electric current; on this floor also are a room for the storage of lecture apparatus, a small lecture room seating eighty students, the chemical library, the professor's study and private laboratory, a laboratory for technical and gas analysis, and a laboratory for physical chemistry. Each desk in the various laboratories is equipped with gas, water, and sink, and, in the organic laboratory, with suction pumps. The ventilation is accomplished by the direct-indirect system, assisted by hoods and three horsepower electric motors and rotary fans. The laboratories for physical and advanced analytical chemistry are equipped with the proper apparatus for thorough experimental work in these subjects. The chemical library, to which students in the laboratories have access at any time, besides reference books on chemical subjects, contains bound files of the chief chemical journals of the world.

BIOLOGICAL LABORATORIES—The Biological Laboratories, located in the Hale Science Building, provide accommodations for work in

general biology, zoology, and botany. The equipment is adequate for large undergraduate classes and for a limited number of advanced students. Students have ready access to the museum, herbarium, and department library. A summer mountain laboratory is maintained at Tolland, Colorado (altitude 8,889 feet), for work in plant and animal ecology.

GEOLOGICAL, MINERALOGICAL, AND GEOGRAPHICAL LABORATORIES—The west wing of the new fire-proof science building now houses the departments of Geology, Mineralogy, and Geography.

In order to meet the increasing demand for instruction in geography and physiography, the department has been equipped with the most approved geographical and meteorological apparatus, including most of the instruments used in the U. S. Weather Bureau.

The Department of Geology has good working collections of mineral and rock specimens.

The laboratories are equipped with apparatus for chemical and optical mineralogy and petrology. The equipment for geologic surveying and mapping is practically complete.

The library of the department consists of about 3,000 volumes. It receives all United States and State Geological Survey reports and several important journals and magazines, and contains the recent text and reference books on geology, mineralogy, petrology, geography, and meteorology.

THE PSYCHOLOGICAL LABORATORY—The Psychological Laboratory occupies four rooms on the third floor of the Liberal Arts Building. It is well equipped for instruction and training in physiological and experimental psychology. The equipment includes the apparatus necessary for general training courses in psychology and psychological methods, chronographs and recording appliances of various kinds, microscopic and lantern slides of brain sections, models, charts, a complete set of anthropometric instruments, etc. Instruments are provided for typical experiments in psychophysics, sensation, perception, association, reaction and movement. Constant additions are being made to the equipment.

MUSEUM AND CABINETS

THE ZOOLOGICAL COLLECTIONS include vertebrate skeletons and skulls, mounted mammals and study skins, mounted birds and study skins, eggs and nests, fishes, reptiles, amphibians, crustaceans, insects, echinoderms, corals, sponges, and mollusks. Special import-

ance attaches to the large collection of land, fresh-water, and marine shells, particularly rich in Rocky Mountain and Pacific Coast material; to fresh-water fishes from various parts of the world, including a large series from Colorado; to a good series of western reptiles and amphibians; and to a collection of Colorado butterflies.

THE BOTANICAL COLLECTION consists of a large series of mounted specimens, including seed plants, lichens, fungi and algæ, a display case of tropical seeds and fruits, a representative series of tropical woods and a collection of economic woods of the United States.

THE GUGGENHEIM BIOLOGICAL COLLECTION, purchased with funds placed at the disposal of the Board of Regents by Simon Guggenheim, consists of a fine series of the nests and eggs of birds taken by Mr. Dennis Gale at various altitudes in Colorado, with the accompanying field notes; also of a valuable collection of mounted birds and mammals, chiefly from Colorado and adjacent states.

THE MINERALOGICAL AND GEOLOGICAL COLLECTION consists of a large series of typical rocks, minerals, Colorado ores, microscopic sections of rocks, ores and minerals, wooden models of crystals, etc. They include both display and study specimens.

THE GUGGENHEIM MINERAL COLLECTION, the gift of Simon Guggenheim, consists of over 1,000 carefully selected type mineral specimens, which will be kept together for reference. It includes a large number of rare minerals not common in university cabinets, and is an extremely valuable addition to the equipment of the Department of Geology.

THE ETHNOLOGICAL COLLECTIONS consist chiefly of material illustrating the ancient culture of the southwestern United States, particularly the pottery, with many stone implements from Ohio and elsewhere, and ethnological material from the Philippines. These collections are increasing very rapidly. At present there are eleven cases of display material, besides many large objects not in cabinets.

THE PHOTOGRAPH AND LANTERN SLIDE CABINETS of the Biology and Geology departments and Museum contain several thousand negatives, prints and lantern slides illustrating various biological and geological phenomena.

THE PALEONTOLOGICAL COLLECTIONS include great quantities of Colorado marine invertebrates, very large numbers of Tertiary insects and plants from the Lake Beds of Florissant, Colorado, Cretaceous plants from various parts of the State and from Kansas, Paleozoic plants from the coal measures of the eastern states, many

thousands of Tertiary and Pleistocene marine invertebrates from the Atlantic and Pacific coasts, a representative collection of Paleozoic invertebrates from the eastern states and Mississippi Valley, many invertebrate fossils from Europe, Panama, and Mexico, and a few important fossil vertebrates, mostly from Colorado.

THE MUSEUM is temporarily located in the Hale Science Building, and contains the paleontological, biological, and ethnological cabinets and part of the mineralogical collections. A large portion of the material hereinbefore described is considered a part of the Museum, though some of the most valuable study collections belong to the Biology and Geology departments, and all of the material in the Museum is intended for the use of the various teaching departments, of the general public, and of specialists working upon lines represented in the collections. More than forty display cases contain suitable material on exhibition, the balance being in drawer cabinets, where it may be examined by students and others interested. Large quantities of duplicates are being collected for class use, research, and exchange purposes. The Museum is at present the depository of the paleontological collections of the Colorado Geological Survey. Several loan collections are also in the cabinets.

ART COLLECTIONS

THE PHILLIPS ART COLLECTION is named from the donors, Mr. and Mrs. Ivers Phillips. It is contained in rooms on the second floor of the east wing of the Macky Auditorium. The masters of painting are represented by Braun autotypes; the works in architecture and sculpture, by large photographic reproductions, casts and several hundred glass transparencies.

THE FARNSWORTH COLLECTION OF COINS was given to the University by Dr. Wilson A. Farnsworth, of Cæsarea, Cappadocia. It consists of some three hundred and fifty Greek, Roman, Byzantine, mediæval, and modern coins. The collection is on exhibition on the third floor of the Arts Building.

COURSES OF STUDY

INTRODUCTORY

In connection with the requirements for graduation the following general tendencies may be noted. An attempt has been made to map out an intelligent and reasonable group system which shall leave adequate freedom for individual needs and abilities, and, at the same time, prevent undesirable scattering of the student's energies. Provision is made for a combination of certain fundamental subjects and free electives with special work that shall be more scholarly and more finally valuable both for cultural attainments and scientific efficiency.

Moreover, the plan adapts itself readily to the needs of students who are looking forward to further work in professional and technical schools. Thus, within the College of Liberal Arts itself provision is made for a College of Commerce with various subdivisions and for a College of Education. By combining work in the College of Liberal Arts with work in the technical schools the student may attain the degree of A.B., and either the degree of B.S. in the College of Engineering, or the degree of LL.B. in the School of Law, in six years, or the degree of M.D. in the School of Medicine, in seven years. In summary, then, we have a group system so arranged that the first two years in the College of Liberal Arts provide alike a foundation for more advanced work along University lines and a sound preparation for courses in technical and professional schools. This latter phase of the plan is in accordance with the growing conviction that the college course must do its part in the genuine preparation of students for a vocation, as well as offer every opportunity for the acquiring of a liberal education in the most enlightened sense of the word.

For the purposes of the present group system the various subjects are arranged as follows:

- I. DIVISION OF LETTERS: 6 groups.
- II. DIVISION OF SCIENCE: 7 groups.
- III. DIVISION OF PHILOSOPHY: 3 groups.
- IV. DIVISION OF HISTORY AND ECONOMICS: 3 groups.

With the same general purpose in view, but carried out in logical detail, the three following colleges have been established.

V. DIVISION OF COMMERCE, organized as the College of Commerce: 4 groups as follows: 1. Banking; 2. Manufacturing; 3. Journalism; 4. Trade, Transportation, Consular Service.

VI. DIVISION OF EDUCATION, organized as the College of Education; a professional group, and groups corresponding to those of the College of Liberal Arts.

VII. DIVISION OF HOME ECONOMICS AND SOCIAL SERVICE organized as the College of Home Economics and Social Service.

Here may also be noted the arrangement for obtaining two degrees in six and seven years by crediting courses in the professional schools as a substitute for the groups and electives of the last two years—an extension of the group system. See pages 58, 112.

VIII. ENGINEERING SUBJECTS: equivalent of two years.

IX. LAW SUBJECTS: equivalent of one year.

X. MEDICAL SUBJECTS: equivalent of one year.

REQUIREMENTS FOR ADMISSION

See pages 26, 27.

REQUIREMENTS FOR GRADUATION

To attain the degree of Bachelor of Arts students must complete one hundred and twenty hours, in addition to the military training or physical education of the first two years, according to the schedule printed below:

Attention is called to the following points:

1. Students must take fifty hours in some scheduled group, including at least five hours in each minor, the adjustment of the remaining hours to be advised by the major professor.

2. Students taking ten hours of either classics, mathematics, or science in the freshman year, shall choose five hours in one of the other groups named, in the sophomore year, unless they have included such five hours in their freshman year.

3. In beginning language courses no credit is given for less than a full year's work.

NOTE—The various branches taught in the College of Liberal Arts are offered in courses of study. A *five-hour course*, as here used, means *five* exercises a week throughout a semester; a course in which the class meets the instructor *once* a week is a *one-hour course*. Three *five-hour courses* successfully pursued for one semester would entitle the student to *fifteen* hours' credit; for one year,

to *thirty* hours' credit and so on. Students regularly take fifteen or sixteen hours per week.

On a day appointed before the beginning of each semester all students are required to record their election of studies for that semester. Credit will be granted for such studies only as have been approved by the Committee on Courses. No student will be permitted to change his course, or drop any study, except by vote of the Committee on Courses.

SCHEDULE

FRESHMAN YEAR

1. ENGLISH LANGUAGE 6 hours*
2. CLASSICS, MATHEMATICS, OR SCIENCE.....10 hours
3. HISTORY OR ECONOMICS.....6 hours
4. FREE ELECTIVES (8 or 10 hours)..... 8 hours
5. REQUIRED MILITARY OR PHYSICAL TRAINING.....

30 hours

SOPHOMORE YEAR

6. CLASSICS, MATHEMATICS, OR SCIENCE..... 5 hours
7. PSYCHOLOGY OR PHILOSOPHY.....5 hours
8. GROUP ELECTIVES (Major or Minor).....10 hours
9. FREE ELECTIVES10 hours
- REQUIRED MILITARY TRAINING

30 hours

JUNIOR YEAR

10. GROUP ELECTIVES (Major or Minor).....20-15 hours
11. FREE ELECTIVES10-15 hours

30 hours

SENIOR YEAR

12. GROUP ELECTIVES (Major or Minor).....20-15 hours
13. FREE ELECTIVES10-15 hours

30 hours

* A written examination in English will be given to each student in the second semester of the Sophomore year, and those found deficient will be required to take additional courses in formal English.

GROUPS

I. DIVISION OF LETTERS

GROUP (a) <i>Major</i> , Latin;	<i>Minors</i> , { Greek, European History.
GROUP (b) <i>Major</i> , Greek;	<i>Minors</i> , { Latin, English Literature or Philosophy.
GROUP (c) <i>Major</i> , German;	<i>Minors</i> , { History, Latin or French.
GROUP (d) <i>Major</i> , { Romance Languages;	<i>Minors</i> , { Latin, German.
GROUP (e) <i>Major</i> , { Literature, Comparative and English;	<i>Minors</i> , { Two of the following: History, English Language, *Classics.
GROUP (f) <i>Major</i> , { English Language;	<i>Minors</i> , { English Literature, English History.

II. DIVISION OF SCIENCES

GROUP (g) <i>Major</i> , Mathematics;	<i>Minors</i> ,	{ Physics, Astronomy.
GROUP (h) <i>Major</i> , Chemistry;	<i>Minors</i> ,	{ Physics, Mathematics.
GROUP (i) <i>Major</i> , Physics;	<i>Minors</i> ,	{ Mathematics, Chemistry.
GROUP (j) <i>Major</i> , Botany;	<i>Minors</i> ,	{ Zoology, Chemistry.
GROUP (k) <i>Major</i> , Zoology;	<i>Minors</i> ,	{ Botany, Chemistry.
GROUP (l) <i>Major</i> , Geology;	<i>Minors</i> ,	{ Chemistry, Mineralogy.
GROUP (m) <i>Major</i> , Mineralogy;	<i>Minors</i> ,	{ Geology, Chemistry.

* The courses presented may be either in English or in the ancient tongue.

III. DIVISION OF PHILOSOPHY

GROUP (n) <i>Major</i> , Philosophy;	<i>Minors</i> , { Psychology, Biology.
GROUP (o) <i>Major</i> , Psychology;	<i>Minors</i> , { Philosophy, Biology.
GROUP (p) <i>Major</i> , Education;	<i>Minors</i> , { Psychology, Biology.

IV. DIVISION OF HISTORY AND ECONOMICS

GROUP (q) <i>Major</i> , History;	<i>Minor</i> , Economics.
GROUP (r) <i>Major</i> , Economics;	<i>Minors</i> , { History, Sociology.
GROUP (s) <i>Major</i> , Sociology;	<i>Minors</i> , { Biology, Psychology.

ORDER OF DESCRIPTION OF COURSES

The various courses offered in the College of Liberal Arts are described in the following order:

Art.	Library Science and Practice.
Biology.	Literature, Comparative and
Chemistry.	English.
Economics and Sociology.	Mathematics.
Education.	Military Training.
English Language.	Music.
Geology, Mineralogy, and	Philosophy, Logic, and Ethics.
Geography.	Physical Education.
Germanic Languages and	Physics.
Literatures.	Psychology.
Greek.	Romance Languages—
Hebrew.	French, Spanish, Italian.
History.	Electives in the Professional
Home Economics.	Schools.
Latin.	

DESCRIPTION OF COURSES*

ART

- 1-2. **COLOR AND DESIGN.** Throughout the year. 2 h.

Conventionalization of natural forms; applied design; the full use of color and all techniques will be developed.

Students in this course will be required to attend a series of lectures on color, historic and modern ornament, lettering, etc., of one hour a week throughout the year in addition to the other studies.

Prerequisite: Freehand drawing. Open on consultation.

- 3-4. **ADVANCED COLOR AND DESIGN.** Throughout the year. 2 h.

The use of natural forms and the human figure, leading to ornamental illustrating for publications, mural decoration, etc.

Students in this course will be required to attend a series of lectures on color, historic and modern ornament, lettering, etc., of one hour a week throughout the year in addition to the other studies.

Prerequisite: Freehand drawing. Open on consultation.

5. **THE HOUSE, ITS FURNISHING AND DECORATION.** First semester. 2 h.

Exercises in the handling of color; color drawings of furnishings and interiors; drawings of floor plans, elevations and details; study of the periods in architecture and in interiors and furnishings; study of modern interior decoration and furniture; the use of household paints and varnishes; dyeing and dye stuffs.

Students in this course will be required to attend a series of lectures on color, historic and modern ornament, etc., of one hour a week throughout the year in addition to the other studies.

6. **MODERN PAINTING.** One semester. 1 h.

A detailed discussion of the purposes of modern paintings and of modern schools and the paintings of the future.

* Courses for graduates only are listed and described under Graduate School. See page 189.

The lecture on color is open to students in this course, but it is not required and no credit will be given.

See, also, under other departments:

Freehand Drawing.

Greek Art.

Masterpieces of Art.

Aesthetics.

BIOLOGY

I. GENERAL BIOLOGY

- 1-2. PRINCIPLES OF BIOLOGY.† Throughout the year. Tu. Th. 10:00. 2 h. For those who wish to know something of current biological theories and discoveries, but do not expect to specialize in the department. Open to freshmen only if they have had some biological work in high school.

Lectures on heredity, evolution, the elements of classification, distribution of organisms in time (paleontology) and space (biogeography), lives of eminent naturalists, etc.

3. SANITARY SCIENCE.† First semester. Division I, for freshmen only. Tu. Th. 8:00. Division II, for sophomores, juniors and seniors, Tu. Th. 2:00. 2 h.

Structure and life activities of bacteria, yeasts and protozoa, especially as related to disease production; fermentation, and the rotation of the elements in nature. Problems of infection and immunity; antitoxins, vaccines, etc. Control of disease in school, home, and city.

4. HYGIENE AND PHYSIOLOGY.†† Second semester. Tu. Th. 8:00. 2 h.

The human body viewed as a mechanism; the operation of that mechanism as a whole and the correlation of its several parts; diet for efficiency, food values, food conservation; individual and family health.

5. HISTORY OF BIOLOGY† First semester. 2 h.

The progress of zoology and botany from the earliest

† These courses count as required science if taken with some laboratory course in the department.

‡ Juniors and seniors receive only partial credit.

times to the present; history of biological investigation; development of established theories; biology and human progress.

Prerequisite: Some course in the department. Not open to freshmen.

6. **PRINCIPLES OF HEREDITY.**† Second semester. Tu. Th. 2:00. 2 h.

Recent progress in the study of heredity in plants and animals; human heredity; eugenics.

Prerequisite: Some course in the department. Not open to freshmen.

7. **PLANKTONOLOGY.** Second semester. 2 h.

Biology and economic relations of the microscopic plants and animals found in ponds, streams, and potable waters.

8. **MICROBIOLOGY.** Second semester. 3 h.

Structure and cultural features of molds, yeasts, bacteria and protozoa with relation to the household, to agriculture and to industries; fermentation; decay. Chiefly a laboratory course.

Prerequisites: Sanitary Science and Botany 4.

9. **PUBLIC HEALTH PROBLEMS.**

10. **TEACHERS' COURSE IN BIOLOGY.** Second semester. 2 h.

The planning and teaching of courses in botany, elementary agriculture and nature study in high schools and grades. Open on consultation.

11. **GENERAL BIOLOGY.** Both semesters.

Students desiring a general biology course may elect Biology 1 and 2, Botany 1 or 3, and Zoology 1 or 14.

For courses for graduates only, see page 189.

II. BOTANY

1. **ELEMENTS OF BOTANY.**‡ First semester. M. W. F. 8:00-10:00. 3 h. Not open to those with high-school credit in Botany.

Followed in the second semester with Botany 2 or Botany 4.

2. **ECONOMIC BOTANY.** Second semester. M. W. F. 8:00-10:00. 3 h.

Grains and other foods; microscopy of flours, meal, breads, starches, spices. Textiles; raw materials of commerce. History and origin of cultivated plants. Botany and the world's food supply.

† These courses count as required science if taken with some laboratory course in the department.

‡ Juniors and seniors receive only partial credit.

3. COLLEGE BOTANY. First semester. M. W. F. 1:00, lectures; Tu. Th. 1:00-3:00, laboratory. 5 h. Some extra time may be required for field work, mapping, etc.
A general introduction to the entire field of botany; structure, behavior and life histories of plants.
Prerequisite: Either elementary botany (or biology) or elementary chemistry.
4. PLANT MORPHOLOGY. Second semester. M. W. F. 1:00, lectures; Tu. Th. 1:00-3:00, laboratory. 5 h. Some extra time may be required for field work and mapping.
A survey of the plant kingdom from alga to seed plant, closing with a study of the spring flora.
Prerequisite: Botany 1 or Botany 3.
5. PLANT ECOLOGY. First semester. 3 h.
Structure and behavior of plants in relation to factors of the environment, as climate, soil, water, light, etc. Geographical distribution, especially of forests and forest trees; field and laboratory work on trees. Use of field instruments.
Prerequisite: either high-school or college botany. Not open to freshmen.
6. PLANT ANATOMY. Second semester. 3 h.
Tissues and tissue systems of Spermatophyta. Vascular anatomy as related to phylogeny. Botanical microtechnique.
Prerequisite: Botany 4.
- 7-8. BOTANY OF COLORADO. Both semesters. Tu. Th. 1:00-3:00 with additional lectures and quiz periods. 3 h.
Prerequisite: Botany 4.
9. MYCOLOGY. Second semester. 3 h.
10. ECOLOGY AND TAXONOMY. (Summer Course.)
Given at the Mountain Laboratory, Tolland, Colorado. See Summer Session announcement.
For courses for graduates only, see page 190.

III. ZOOLOGY

- 1-2. GENERAL ZOOLOGY. Throughout the year. Tu. Th. 1:00, lectures; M. W. F. 1:00-3:00, laboratory. 5 h.
Invertebrates the first semester; vertebrates the second semester.
Prerequisite: elementary chemistry and biology are desirable but not required.

- 3-4. **CYTOLOGY.** Both semesters. M. W. F. 1:00-3:00 with additional quiz hour to be arranged. 3 h.

Prerequisite: General Zoology or Botany 4.

5. **ECONOMIC ZOOLOGY.** First semester. 1 h.

Animals and animal products useful to man; foods, textiles, drugs, etc.

6. **ORNITHOLOGY.** Second semester.

A general account of the birds of the world with special reference to economic forms and Colorado species. Lectures, supplemented with identification of specimens in museum and laboratory; some field work.

- 7-8. **COMPARATIVE ANATOMY OF VERTEBRATES.**

- 9-10. **ICHTHYOLOGY.** For advanced students.

11. **GENERAL ENTOMOLOGY.** First semester.

The elements of entomology, including the classification and life histories of insects, with discussion of the biological principles illustrated by insects.

Prerequisite: a course in biology or zoology.

12. **MEDICAL AND ECONOMIC ENTOMOLOGY.** Second semester.

Insects injurious or beneficial to man, with special reference to those which serve as carriers of disease.

Prerequisite: General Entomology.

13. **FIELD ZOOLOGY.** (Summer Course.)

Given at the Mountain Laboratory, Tolland, Colorado.

14. **ELEMENTS OF ZOOLOGY.** Second semester. 3 h.

Chiefly a laboratory course illustrating general principles. Desirable as supplementing "Principles of Biology". Zoology majors and pre-med students should elect General Zoology.

For courses for graduates only, see page 190.

CHEMISTRY

1. **GENERAL INORGANIC CHEMISTRY.*** Throughout the year. 11:00. 3 h. This course is especially designed for those who have not studied chemistry. Those electing Course 1 must also elect Course 2.

A course of lectures dealing with the laws and theories of chemistry, together with a study of the elements and their most important compounds.

* All students entering the Department of Chemistry and not presenting university credits in general inorganic chemistry must take courses 1 and 2.

2. GENERAL INORGANIC CHEMISTRY.* Throughout the year. Tu. Th. 8:00 or 1:00. 2 h.
Laboratory and quiz sections.
A detailed course supplementing Course 1.
3. ELEMENTARY QUALITATIVE ANALYSIS. Either semester. M. W. F. 1:00. 3 h.
Lectures, recitations and laboratory.
A course in the identification and separation of the more common bases and acids.
Prerequisite: courses 1 and 2.
- 3a. ELEMENTARY QUALITATIVE ANALYSIS. Second semester. Tu. Th. 8:00 or 1:00. 2 h. This course is intended primarily for students who have had high-school chemistry and who show more than average ability in the first semester of Courses 1 and 2. The second semester of Course 1 must be taken with this course.
An introductory course in qualitative analysis.
4. QUALITATIVE ANALYSIS OF THE RARE ELEMENTS. Second semester. Tu. Th. 1:00. 2 h.
The identification and separation of the rare elements.
This course may be taken as a continuation of Course 3.
- 4a. ADVANCED QUALITATIVE ANALYSIS. Either semester. M. W. F. 1:00. 3 h.
Lectures, recitations and laboratory.
A course in the systematic separation of acids and bases including the rare elements.
This course is a continuation of Course 3 or 3a.
5. QUANTITATIVE ANALYSIS. First semester. M. Th. 11:00 and Tu. Th. 1:00. 4 h.
Lectures, recitations and laboratory.
Elementary gravimetric and volumetric analysis, chemical calculations, etc.
This course may be taken with Course 3 or Course 4a, but may not precede these courses.
6. QUANTITATIVE ANALYSIS. Second semester. M. W. F. 1:00. 3 h.
This course is a continuation of Course 5.

* All students entering the Department of Chemistry and not presenting university credits in general inorganic chemistry must take courses 1 and 2.

7. ANALYSIS OF IRON AND STEEL. First semester. 1:00. 2 h.

A practical course in the laboratory methods in use in the leading steel works.

Prerequisite: Courses 5 and 6.

8. SANITARY WATER ANALYSIS. Either semester. 8:00 or 1:00. 2 h.

A course in the chemical and bacteriological examination of water with regard to its use for drinking purposes.

Prerequisite: Course 5.

9. MINERAL WATER ANALYSIS. First semester. 8:00 or 1:00. 2 h.

A course in the analytical methods used in the determination of the mineral and gaseous constituents of natural waters.

Prerequisite: Courses 5 and 6.

10. ORE ANALYSIS. First semester. 1:00. 3 h.

A course in the analysis of ores, slags, etc., by the technical methods in use in mills and smelters.

Prerequisite: Courses 5 and 6.

11. GAS ANALYSIS. Second semester. 1:00. 2 h.

A course in the methods for determining the constituents of gas mixtures, especially as applied to illuminating gas and furnace gases.

Prerequisite: Courses 5 and 6.

12. ORGANIC CHEMISTRY. Either semester. 2:00. 4 h.

Lectures.

A study of the methods of preparation and the properties of the more important organic compounds. Special stress is laid upon the theories underlying the subject and the proofs of the constitution of most of the substances studied.

13. ORGANIC CHEMISTRY. Second semester. Time to be arranged.
2 h.

A laboratory course supplementing Course 12, designed to give practice in organic laboratory methods, and may be taken with Course 12.

14. LABORATORY PRACTICE IN ORGANIC PREPARATIONS. Second semester. M. W. F. 1:00. 3 h.

An advanced course in the preparation of typical aliphatic and aromatic compounds.

Prerequisite: Course 12.

15. **ELEMENTARY ORGANIC ANALYSIS.** Second semester. Time to be arranged. 3 h.

A course in the identification and separation of pure organic compounds, and their ultimate analysis.

Prerequisite: Laboratory work in organic chemistry.

16. **FOOD ANALYSIS.** Either semester. Any three periods. 8:00 or 1:00. 3 h.

Lectures and laboratory.

A detailed course giving practice in the official and standard methods for the analysis of foods and the detection of adulterants.

Prerequisite: Courses 5, 6, and 12.

17. **PHYSICAL CHEMISTRY.** Throughout the year. M. W. F. 11:00. 3 h.

A lecture course presenting the conceptions of the modern physico-chemical theories concerning the states of aggregation of matter, solutions, thermo-chemistry, equilibria, chemical kinetics, electro-chemistry, and actino-chemistry.

18. **PHYSICAL CHEMISTRY.** Throughout the year. M. F. 1:00. 2 h.

A laboratory course supplementing Course 17, consisting of the determinations of densities, molecular weights, thermo-chemical and optical constants, conductivity of solutions, electromotive force, transference numbers, viscosity, surface tension, electrochemical equivalents, transition points, etc.

19. **ELECTROCHEMICAL ANALYSIS.** Second semester. 1:00. 2 h.

Laboratory practice in the determination and separation of the common metals by electrolytic methods.

20. **ADVANCED ANALYTICAL CHEMISTRY.** First semester. Time to be arranged. 3 h. Open to seniors and graduates.

Lectures and laboratory.

21. **ADVANCED ANALYTICAL CHEMISTRY.** Second semester. Time to be arranged. 3 h.

Lectures and laboratory.

A continuation of Course 20.

22. **INDUSTRIAL CHEMISTRY.** Second semester. Time to be arranged. 3 h.

A lecture course on the principal chemical industries.

23. HISTORY OF CHEMISTRY. Second semester. Th. 11:00. 1 h.
Prerequisite: Courses 1, 2, 3, 4.
24. DRUG ASSAYING: PHARMACOPOEIAL TESTING. Second semester.
Any three periods. 8:00 or 1:00. 3 h.
A laboratory course giving practice in the official and standard methods for the identification, determination of purity, detection of adulterants and assaying of official drugs.
Prerequisite: Courses 5, 12.
25. DRUG ASSAYING: ORGANIC ANALYSIS. First semester. Any three periods. 8:00 or 1:00. 3 h.
A laboratory course in the qualitative and quantitative analysis of pharmaceutical and commercial organic products, such as alcohol, ethers, esters, glycerine, soaps, formalin, organic acids, etc. Also the ultimate analysis of organic compounds.
Prerequisite: Courses 5, 6, 12.
26. DRUG ASSAYING: ALKALOIDAL ASSAYING. Second semester. Any two periods. 8:00 or 1:00. 2 h.
Lecture and laboratory course.
A course consisting of all the most important alkaloidal assays and the separation and detection of the alkaloids.
Prerequisite: Courses 5, 6, 12.
27. ADVANCED FOOD ANALYSIS. Second semester. Any three periods. 8:00 or 1:00. 3 h.
An advanced laboratory course in the official and standard methods of food analysis.
Prerequisite: Course 16.
28. SANITARY CHEMISTRY. Second semester. 3 h. Primarily for Pharmacy students, but may be elected by students in other departments by special permission.
Lectures and laboratory.
A course in the sanitary and bacteriological examination of water for drinking purposes, in the chief methods of food analysis, and in the detection of adulterations.
Prerequisite: Courses 5, 12.

ECONOMICS, SOCIOLOGY, AND POLITICAL SCIENCE

I. ECONOMICS

1. INDUSTRIAL HISTORY OF MODERN EUROPE.* Two divisions. First semester. M. W. F. 8:00, 2:00. 3 h.

Recitations, lectures, reports.

Traces the industrial and social development of the principal nations of Europe from the French Revolution to the present time.

This course is designed to be introductory to all courses in Economics.

2. ECONOMIC HISTORY OF THE UNITED STATES.* Two divisions. Second semester. M. W. F. 8:00, 2:00. 3 h.

Recitations, readings, lectures.

Traces the growth of industry, agriculture, commerce, transportation, population, and labor from the simple, isolated, agricultural communities of the colonies, to the complex industrial and commercial society of today.

Logically follows Course 1.

3. PRINCIPLES OF ECONOMICS. Both semesters. M. W. F. 9:00. 3 h. Not open to freshmen.

The purpose of this course is to teach fundamental principles; to open the field of economics in the way most helpful to further and more detailed study of special problems, and to give those not intending to specialize in the subject an outline of the general principles of economics.

4. PRINCIPLES AND PROBLEMS OF ECONOMICS. Throughout the year. M. W. F. 10:00. 3 h. Not open to freshmen.

The purpose of this course is similar to Course 3, but it involves a more extended discussion of fundamental principles and a study of a larger number of specific problems.

5. PRINCIPLES OF ADVERTISING. First semester. Th. 11:00. 1 h.
See the Department of Psychology.

6. STATISTICS. Second semester. Tu. Th. 1:00. 2 h.

This course deals with elementary principles together with their applications, special emphasis being given to vital statistics.

* Juniors and seniors receive only partial credit.

7. **ECONOMIC AND COMMERCIAL GEOGRAPHY.** First semester. M. W. F. 3:00. 3 h.
A study of the influence of the geographic environment on the economic life and development of peoples.
8. **HISTORY OF COMMERCE.** Second semester. M. W. F. 3:00. 3 h.
A study of the development of the world's commerce with special attention to modern commercial organization.
9. **LABOR PROBLEMS.** First semester. M. W. 11:00. 2 h. Not open to freshmen.
Recitations, reports, lectures.
A study of labor organizations, employers' associations, their respective methods of bargaining, the relation of government to both.
10. **SOCIAL LEGISLATION.** Second semester. M. W. 11:00. 2 h. Not open to freshmen.
Recitations, reports, lectures.
A study of legislation to remedy conditions of destitution and dependence.
11. **MONEY AND BANKING.** Throughout the year. Tu. Th. 8:00. 2 h.
Lectures, readings, discussion.
The history and theory of money, credit, and banking; special attention given to present-day problems of money and banking in the United States.
Prerequisite: Course 3 or 4.
12. **TRANSPORTATION.** Second semester. Tu. Th. 1:00. 2 h.
Recitations, reports, lectures.
A study of the development of rail and water transportation in the United States; special emphasis laid on the condition of railway transportation at the present time. Rates and rate-making, finance, traffic, operation, and legislation, are studied in turn.
Prerequisite: Course 3 or 4.
13. **CORPORATIONS.** First semester. Tu. Th. 8:00. 2 h.
Lectures, discussions, reports.
A study of the nature and organization of corporations. A comparison of the corporate form with other forms of business enterprise. The methods of forming corporations; types of securities; methods of marketing stocks and bonds; financing

an enterprise; distribution of earnings; reorganization; problems of regulation and control.

Prerequisite: Course 3 or 4.

14. TAXATION. First semester. Tu. Th. 2:00. 2 h.

Lectures, discussions, reports.

A general study of the theory of public finance and a more detailed study of the revenue systems in the United States.

Prerequisite: Course 3 or 4.

15. LIFE INSURANCE. Second semester. Tu. Th. 3:00. 2 h.

16. MODERN ACCOUNTING. Throughout the year. M. W. F. 3:00.
3 h.

17. TRUSTS. Second semester. Tu. Th. 1:00. 2 h.

Lectures, discussions, reports.

A study of the economics of integration and combination. The trust movement—its causes, characteristics, and monopoly tendencies. Competition and regulation; the Federal Trade Commission; proposed solutions of the trust problem.

Prerequisite: Course 3 or 4.

18. BUSINESS ORGANIZATION AND SCIENTIFIC MANAGEMENT. Second semester. Tu. Th. 8:00. 2 h.

A study of the forms, methods, and principles of business organization and management; production, administration, and sales; records and accounts; systems of wage payments; principles of efficiency and scientific management.

Prerequisite: Course 3 or 4.

19. MATHEMATICAL THEORY OF INVESTMENTS. First semester. Tu. Th. 10:00. 2 h.

See Department of Mathematics.

20. THE CONSERVATION OF NATIONAL RESOURCES. Second semester. Tu. Th. 2:00. 2 h.

A study of national policies for the prevention of wastes, both human and material, and the upbuilding of a relatively permanent national prosperity.

For courses for graduates only, see page 204.

II. SOCIOLOGY

1. PRINCIPLES OF SOCIOLOGY. Throughout the year. Tu. Th. 10:00.
2 h. For juniors and seniors.

Lectures, readings, discussions.

In this course an attempt is made to formulate the fundamental laws of association, with special reference to their relation to social progress. Such topics as the influence of the physical environment, natural selection, warfare, division of labor, sex and sexual selection, heredity, imitation, social oppositions, art, science, and religion will be discussed with reference to their effects on social progress.

2. PROBLEMS IN SOCIOLOGY. Throughout the year. Tu. Th. 9:00.
2 h.

Lectures, assigned readings, discussions.

This course takes up the study of our various social institutions, placing special emphasis upon the family, its origin, function and problems. The course includes a study of immigration, race problems, poverty, crime, and kindred subjects.

Prerequisite: Economics 3 or 4.

3. SOCIALISM. First semester. Tu. Th. 9:00. 2 h.

Proposals for the reorganization of society on a socialistic basis will be studied historically and critically. Writings of the early French and English socialists will be reviewed, but the major part of the course will be devoted to the study of German scientific socialism.

Prerequisite: Economics 3 or 4.

4. ENGLISH NINETEENTH CENTURY REFORMERS. First semester.
Tu. Th. 1:00. 2 h.

The lives of English Reformers, with discussion on the principles and methods of reform. Wilberforce, Robert Owen, Cobden, Bright, J. S. Mill, Kingsley, Maurice, Florence Nightingale, Shaftsbury, Octavia Hill, Ruskin, Dickens, Huxley, William Morris, A. R. Wallace, etc.

5. ADVANCED THEORY OF SOCIOLOGY. Second semester. Tu. Th. 9:00. 2 h. For advanced students only.

A critical study of the theories of the leading sociologists beginning with Auguste Comte.

6. RURAL SOCIOLOGY. First semester. Tu. Th. 9:00. 2 h.

A study of the social problems of rural community life.
For courses for graduates only, see page 204.

III. POLITICAL SCIENCE

1. NATIONAL GOVERNMENT OF THE UNITED STATES. First semester. M. W. F. 8:00. 3 h. Open to freshmen.

An elementary course in American Government, intended as a preparation for advanced work in political science, for teaching in secondary schools, and for good citizenship. Deals with the organization and work of the national government in all of its aspects.

2. STATE AND LOCAL GOVERNMENT. Second semester. M. W. F. 8:00. 3 h. Open to freshmen.

Deals with problems in state and local government, development of state institutions, new departures in legislation and administration, the initiative, the referendum, the recall, the budget, working of our courts, state police development, civil service and the short ballot movement; special emphasis on Colorado.

3. COMPARATIVE EUROPEAN GOVERNMENT. Second semester. M. W. F. 1:00. 3 h.

A study of the organization and workings of the governments of representative European states, especially Great Britain, France, Germany, and Switzerland; party systems and cabinet government in these countries.

Prerequisite: Course 1, Course 2, or equivalent.

4. MUNICIPAL GOVERNMENT. First semester. M. W. F. 1:00. 3 h.

A study of city charters, methods of city organization and administration, relation of the city to the state, home rule movement, commission government, the city manager type, short ballot and other reforms, comparisons with European cities.

Prerequisite: Course 2, or equivalent.

5. POLITICAL PARTIES AND PARTY PROBLEMS. First semester. Tu. Th. 1:00. 2 h.

This course deals with the functions, history, and organization of political parties, party machinery, and such current party problems as direct primaries, nomination by petition, non-partisan elections, preferential voting, corrupt practices acts, and methods of party finance.

Prerequisite: Course 1, Course 2, or equivalent.

6. CONSULAR AND DIPLOMATIC SERVICE. First semester. Tu. Th. 1:00. 2 h. Alternates with Course 5.

Outline of the growth of international relations, the mode of conducting foreign affairs, methods of making, interpreting and terminating treaties and compacts, organization, duties and immunities of consular and diplomatic agents, diplomatic relations with Latin America and the Far East.

Prerequisite: Course 1, or equivalent.

7. INTERNATIONAL LAW AND RELATIONS. Second semester. Tu. Th. 1:00. 2 h. Alternates with Course 8.

A study of the nature, sources and sanction of international law; status of nations; rules of peace, neutrality and war; doctrine and rules of neutrality; international rights of persons and property in time of peace and war; the Hague Conferences; newer problems, tendencies, and proposals; international unions, associations and cooperation.

Prerequisite: Courses 1 and 3, or equivalent.

8. MUNICIPAL FUNCTIONS AND PROBLEMS. Second semester. Tu. Th. 1:00. 2 h.

In this course will be considered some of the prominent problems of the modern city. Attention will be given to such questions as municipal ownership and regulation of public utilities, franchises, accounting and budget making, markets, city planning, municipal lodging and housing, recreation facilities, dust prevention, unemployment, the garden city movement, the social evil, public health, and other problems.

Prerequisite: Course 4 or equivalent.

9. PRACTICAL CITIZENSHIP. First semester. Th. 11:00. 1 h.

A study of the place of the citizen in a democracy; acquisition and loss of citizenship; privileges and duties of citizens.

10. GOVERNMENTS AND IDEALS OF THE STATES AT WAR. Second semester. Th. 11:00. 1 h.

A survey of the political theories and ideals underlying the governments of the states at war and a critical consideration of the various governments.

EDUCATION

1. GENERAL PSYCHOLOGY. (PSYCHOLOGY 1.) Two sections. First semester. M. W. F. 11:00, 1:00, with an additional hour to be arranged for recitations and conferences. 3 h.

2. EDUCATIONAL PSYCHOLOGY. (PSYCHOLOGY 7 or 2.) Second semester. M. W. F. 2:00 or 3:00. 3 h.

3. PRINCIPLES OF EDUCATION. First semester. M. W. F. 8:00. 3 h.
An elementary discussion of the nature, scope, and aims of Education; an examination of those facts, theories, and hypotheses of biology, physiology, anthropology, psychology, sociology, and economics which would seem to have significance for educational theory; a synthesis of what is found to be pertinent into a working creed for the educator.

4. PUBLIC EDUCATION; ITS ORGANIZATION AND MANAGEMENT. Second semester. M. W. F. 8:00. 3 h.

The relationships between public education and government; school law; the internal organization of a school system; school hygiene; school discipline; courses of study. The topics are treated in an elementary way.

Prerequisite: Courses 1, 2, and 3, or their equivalent.

- 5-6. PRINCIPLES AND PRACTICE OF TEACHING. Both semesters. Tu. Th. 8:00 and other hours to be arranged. 2-6 h.

The application of principles to practice; the method and methods of the teacher in the elementary and secondary schools; comparative study of general and special methods; improvements in methods; classroom problems and their solution; the learning process and its direction; how we think and learn to think; how to study; how to teach others to study; essentials in the learning and teaching of the elementary and secondary school subjects.

Practice teaching is done in the University Training School (an ungraded school managed by the University), and in the Boulder High School. The student teaches under real school-room conditions except that classes are smaller, beginning teachers are helped more, and supervision emphasizes the learning rather than the teaching process.

Prerequisite: Courses 1, 2, 3, and 4, or their equivalents, senior standing, and the instructor's permission.

7. HISTORY AND PHILOSOPHY OF EDUCATION. First semester. M. W. F. 10:00. 3 h. Open to all except freshmen.

This course deals with the history of culture and civilization, of social and intellectual as well as of definite school influences in China, India, Persia, and other Asiatic countries,

as well as in Greece and Rome. It also deals with primitive Christian and Mediæval education.

8. HISTORY AND PHILOSOPHY OF MODERN EDUCATION. Second semester. M. W. F. 10:00. 3 h. Open to all except freshmen.

In this course it is necessary to confine the work more strictly to academic education. The course deals with all the great reform movements from the Revival of Learning to the present day.

9. SECONDARY EDUCATION. First semester. Tu. Th. 8:00. 2 h.

Designed to give a broad view of the purposes and methods of secondary education; includes a brief historical survey; a study of existing systems, their organization and administration; the secondary school curriculum; the social life of high-school pupils; and a critical study of proposed plans for reorganization of the secondary school.

Prerequisite: Courses 1, 2, 3, and 4, or their equivalent.

10. ANTHROPOLOGY. First semester. M. W. F. 9:00. 3 h.

An introductory study of the natural history of man; a survey of his physical and intellectual evolution; his agreements with and divergencies from allied animals; theories of time and place of origin; the main divisions of mankind and their general physical and mental characteristics; the general laws of man's existence and development, his relation to the rest of nature; beginnings and transmission of culture; chief divisions of primitive culture; prehistoric archæology.

11. ETHNOLOGY. Second semester. Tu. Th. 9:00. 2 h.

A comparative study of typical tribes and peoples in their respective geographical habitats; the cultural conditions as differentiating peoples; the variety and range of human activities; the elementary thoughts of mankind—primary elements of culture and mental life; the origin, growth, and present condition of the social, religious, industrial, political, and scientific occupations and institutions of various peoples; the identity of "the human" in the variety of peoples; culture grades and their causes.

12. SOCIAL PSYCHOLOGY. (PSYCHOLOGY 11.) First semester. Tu. Th. 9:00. 2 h.

13. EDUCATION AND SOCIETY. Second semester. M. W. F. 9:00. 3 h.

A study of the interrelations of education and society; society's responsibilities to, and need of, the school; the school's duty to, and expectations of, society; educational institutions and forces other than the school; society an educational device.

Prerequisite: Courses 1, 2, 3, and 4, or their equivalents.

14. SCHOOL SUPERVISION. Second semester. Tu. Th. 8:00. 2 or 3 h.

A study of those phases of school work that require coordination and the cooperation of the entire teaching corps. The course is planned for both teachers and supervisors. Among the topics to be studied are: the methods of supervision; the graded system and its modifications; the training, selection, promotion, and professional growth of teachers; school finance; records and reports.

Prerequisite: Courses 1, 2, 3, and 4, or their equivalent.

15. PRACTICUM IN EDUCATION. Either or both semesters. Hour to be arranged. Credit to be arranged.

The class will work on the seminar plan. The topic for 1918-1919 will be vocational education and vocational guidance in the public schools.

16. SEMINAR IN EDUCATION. Either or both semesters. Tu. 7:40 p. m. 2 h.

Subject-matter will vary from year to year; special examination and investigation of selected problems of importance in educational theory and practice; provision for independent investigations and for research in special problems.

Prerequisite: senior or graduate standing, and the instructor's permission.

ENGLISH LANGUAGE

1. FRESHMEN ENGLISH. Fourteen sections. Throughout the year.

M. W. F. 8:00, 9:00, 10:00, 11:00, 3:00. 3 h. Required of all freshmen.

Textbook, daily themes, oral exercises.

2. ADVANCED COMPOSITION. Three sections. Both semesters. Tu.

Th. 9:00, 10:00, 2:00. 2 h.

Textbook, themes.

3. **SHORT STORY.** Second semester. Tu. 7:30. 2 h.

A course in writing short stories under criticism of the instructor and the class, to which only a limited number of apt students are admitted.

4. **ARGUMENTATION AND DEBATE.** Throughout the year. W. 2:00-4:00. 2 h. Not open to freshmen.

At the end of the first semester the University debating squad is selected. Those forming this squad will be given two additional credits. No student shall receive more than a total of ten credits in debating.

5. **PUBLIC SPEAKING.** Throughout the year. Tu. Th. 3:00, and afternoons to be arranged. 2 h. Not open to freshmen.

No credit will be allowed unless the course is continued through both semesters.

A study of oratorical style, analysis and writing of orations, practical exercises.

6. **JOURNALISM.** Throughout the year. Tu. Th. 2:00. 2 h. Not open to freshmen.

Lectures, reports, practical work.

7. **ADVANCED JOURNALISM.** Tu. Th. 3:00. 2 h.

Lectures, reports, practical work.

Prerequisite: Journalism.

8. **HISTORY OF THE ENGLISH LANGUAGE.** First semester. M. W. F. 10:00. 3 h.

Lectures and recitations.

9. **ANGLO-SAXON.** First semester. M. W. F. 3 h.

Bright's Anglo-Saxon Reader.

10. **ANGLO-SAXON.** Second semester. M. W. F. 3 h.

Beowulf.

11. **MIDDLE ENGLISH.** First semester. Tu. Th. 11:00. 2 h.

Supplementary reading, lectures, reports.

Emerson's Middle English Reader.

12. **CHAUCE.** Second semester. Tu. Th. 11:00. 2 h. Not open to freshmen.

Lectures, readings, reports. Skeat's Texts.

13. **SHAKESPEARE.** Both semesters. M. W. F. 11:00. 3 h. Not open to freshmen.

The careful reading of three plays each semester. Rolfe's Texts.

14. PRE-SHAKESPEAREAN DRAMA. First semester. Tu. Th. 11:00.
2 h. Not open to freshmen.
Lectures, readings, reports. Manly's Specimens of Pre-Shakespearean Drama.
15. INTERPRETATION OF ENGLISH POETRY. Second semester. Tu. Th. 11:00. 2 h. Not open to freshmen.
Lectures, readings, reports.
16. STUDY OF PROSE STYLE. First semester. Tu. Th. 9:00. 2 h.
Not open to freshmen.
Lectures, readings, reports.
17. ENGLISH FOR TEACHERS. M. W. F. 9:00. 3 h.
Lectures, reports, discussions.
For courses in Literature, Comparative and English, see page 95.

GEOLOGY, MINERALOGY, AND GEOGRAPHY

I. GEOLOGY

A. Courses for Undergraduates.

- 1-2. GENERAL GEOLOGY. Throughout the year. Daily. 1:00. 5 h.
Field and laboratory work, Tu. and Th.

The course will consist of a study of the principles of geology, with special reference to the geological history of North America. Field study will be an important feature of the course. Students physically unable to take the field work, may register for 4 hours' credit in the first semester.

Students who have completed Geography 1 and who desire Geology 1-2, will receive four hours' credit for the first semester and full credit for the second semester.

Prerequisite: high-school chemistry or college chemistry.

- 3-4. ENGINEERING GEOLOGY. Throughout the year. M. W. F. 11:00, with two hours' additional laboratory work per week, arranged to suit the convenience of the class. 3 h. each semester. Open to upper classmen who are not majoring in geology.

The first semester the course will include a general discussion of the principles of geology. The second semester it will be a study of the geological materials important in engineering.

B. Courses Open to Undergraduates and Graduates.

- 5-6. ECONOMIC GEOLOGY. Throughout the year. First semester. M. W. F. 10:00; second semester, M. W. F. 10:00; with two hours' additional laboratory work a week, arranged to suit the convenience of the class. 3 h. each semester.

A study of the mineral resources of the United States, including the origin and character of ore bodies, the ores of iron, copper, lead, zinc, gold, silver, etc.; the extraction and uses of the metals; fuels, building materials, fertilizers, mineral waters, etc.

Prerequisite: Geology 1-2 or 3; Mineralogy 1-2 is strongly recommended.

7. OIL GEOLOGY. Second semester. M. W. 11:00. 2 h.

Prerequisite: a satisfactory knowledge of general geology.

8. GEOLOGIC SURVEYING. Three periods first semester; two periods second semester. 5 h.

Given in alternate years. Given in 1918-1919.

This course is designed to train the student in all kinds of geologic field work. The methods used are those employed by the U. S. Geological Survey.

Prerequisite: superior work in two geology courses and Economic Mineralogy. Open on consultation.

- 9-10. ADVANCED GEOLOGY. Throughout the year. M. W. F. 2:00. 3 h. each semester. Given in alternate years. Given in 1918-1919.

A special study of the problems of dynamic, structural, and historical geology.

Prerequisite: Geology 1-2; Mineralogy 1-2 is strongly recommended.

- 11-12. GEOLOGY OF COLORADO. Throughout the year. M. W. F. 2:00. 3 h. each semester. Given in alternate years. Not given in 1918-1919.

A study of the dynamic, structural, historical, and economic geology of Colorado.

Prerequisite: Geology 1-2; or Geography 1, and Mineralogy 1-2.

13. GEOLOGIC MATERIALS FOR INDUSTRIAL CHEMISTRY. Second semester. M. W. F. 10:00. 3 h.

A study of the occurrence, properties and uses of geological products of economic value in chemical industries.

Prerequisite: a year in general chemistry.

14. GEOLOGY. (A CULTURE COURSE.) Throughout the year. M. W. 2:00. 2 h. Open to juniors, seniors, and graduates.

A lecture and reading course for general culture rather than scientific training.

This course does not count toward the science requirement, nor will credit be given to students who have credit for Geology 1-2.

- 15-16. PALEONTOLOGY. Throughout the year. 3 h. each semester.

The course is open to advanced students in geology and biology, on consultation with the professor.

It will include lectures on the principles of paleontology, and the facts concerning the development of types which characterize the several periods of geologic time; laboratory work in the identification, classification and description of fossil animals and plants, and the discussion of their stratigraphic and biologic position and significance.

For courses for graduates only, see page 193.

II. MINERALOGY AND PETROLOGY

A. *Courses for Undergraduates.*

- 1-2. ECONOMIC MINERALOGY. Throughout the year. Tu. Th. 8:00, one lecture and recitation period and two laboratory periods. 3 h. each semester.

The course includes the determination of minerals of economic importance by chemical and physical tests and the study of collections of economic minerals.

Prerequisite: a course in general chemistry.

3. CRYSTALLOGRAPHY. First semester. W. F. 11:00. 2 h.

An elementary course that includes the study of crystals and crystal models.

B. Courses Open to Graduates and Undergraduates.

4. FIRE ASSAYING. Second semester. M. W. F. 1:00; one recitation and lecture period and two laboratory periods. 3 h.
Prerequisite: Economic Mineralogy and Qualitative Analysis.
- 5-6. ADVANCED MINERALOGY. Throughout the year. One lecture and recitation period and one laboratory period. 2 h. each semester.

A course in descriptive and determinative mineralogy. Minerals not studied in Course 1-2 are determined in the laboratory.

Open on consultation.

7. ADVANCED CRYSTALLOGRAPHY. First semester. 2 h. May be continued the second semester as a one-hour or two-hour course.

This course includes measurement of crystal angles with the reflecting goniometer, determination of indices and axial ratios, stereographic projection, and crystal drawing.

8. OPTICAL MINERALOGY. First semester. 3 h. Open on consultation.
9. PETROGRAPHY. Second semester. 3 h. This course should be taken in the senior year by students who expect to do graduate work in geology.

Lectures, recitations, laboratory, work with petrographic microscope.

Prerequisite: Optical Mineralogy.

For courses for graduates only, see page 194.

III. GEOGRAPHY

1. PHYSICAL GEOGRAPHY (PHYSIOGRAPHY). First semester. M. Tu. W. F. 9:00, lectures and recitations; Th. 8:00-11:00, or 9:00-12:00, field or laboratory work. 5 h.

This course includes a study of the atmosphere, the waters of the earth, the agencies of geologic and geographic changes, and the development and history of the physical features of the earth.

It may be taken with Geography 2 and 4 or 3 and 4 to complete ten hours of science. Students who have completed

Geology 1-2 and who desire this course will receive four hours' credit.

2. GEOGRAPHY OF NORTH AMERICA. Second semester. M. W. F. 9:00. 3 h.

A study of the natural resources of the continent as factors in its cultural, historical and industrial development.

Prerequisite: Geography 1 or Geology 1.

3. ADVANCED PHYSIOGRAPHY. Second semester. Tu. 10:00; Th. 10:00-12:00; one hour to be arranged. 3 h.

The course is largely a continuation of Geography 1 and deals largely with the laboratory side of the work and the methods of teaching physical geography and physiography.

Prerequisite: Geology 1 or Geography 1. Not open to freshmen and sophomores. Given in alternate years. Not given in 1918-1919.

4. CLIMATOLOGY. Second semester. Tu. 8:00-10:00; Th. 9:00. 2 h.

A practical course based on a study of the atmospheric phenomena and geographic conditions which affect the daily life of all races. It includes a discussion of the climatic zones and the relation of climate to crops, industry and health.

Prerequisite: Geography 1, Geology 1, or Botany 1.

GERMANIC LANGUAGES*

GERMAN

- 1-2. ELEMENTARY COURSE. Throughout the year. 8:00, 9:00, 1:00. 5 h.

Grammar, pronunciation, reading; practice in writing and speaking German.

- 3-4. INTERMEDIATE COURSE. Throughout the year. M. W. F. 8:00, 10:00. 3 h.

Reading of selected masterpieces of German literature, such as Lessing's *Minna von Barnhelm*, Schiller's *Jungfrau von Orleans*, Ludwig's *Zwischen Himmel und Erde*, Freytag's *Die Journalisten*.

Prerequisite: Course 1-2, or two years of high-school German. It is strongly recommended that Course 3a-4a accompany Course 3-4.

* So far as practicable, the classes in this department are conducted in the German language.

- 3a-4a. COMPOSITION AND COLLOQUIAL PRACTICE. Throughout the year. Tu. Th. 8:00, 9:00, 10:00. 2 h.
German themes and letters; drill in syntax and idiom.
Prerequisite: Course 1-2, or two years' of high-school German. It is recommended that Course 3a-4a be taken parallel with Course 3-4.
5. LESSING AS A DRAMATIST. First semester. 3 h.
Study of Nathan der Weise and Emilia Galotti; readings from Lessing's other works; discussions and reports.
Prerequisite: Courses 3-4 and 3a-4a.
6. VON SCHEFFEL'S EKKEHARD. First semester. 3 h.
Reading and study of the entire novel.
Prerequisite: Course 3-4 and 3a-4a.
7. FREYTAG'S BILDER AUS DER DEUTSCHEN VERGANGENHEIT. Second semester. 3 h.
Reading and study of selections.
Prerequisite: Course 5 or 6.
8. SCHILLER'S WALLENSTEIN AND DIE BRAUT VON MESSINA. Second semester. 3 h.
Readings from the other plays of Schiller; discussions and reports.
Prerequisite: Course 5 or 6.
9. GOETHE'S DRAMAS, EXCLUSIVE OF FAUST. One semester. 3 h.
Readings, discussions, papers.
Prerequisite: Course 5 or 6.
10. THE GERMAN DRAMA OF THE NINETEENTH CENTURY. First semester. 3 h. Open to advanced students who read German with facility.
Reading of representative plays and discussion of the problems which they present.
11. ADVANCED COMPOSITION. Both semesters. 2 h. Open to advanced students on consultation; recommended to prospective teachers of German.
Themes on various aspects of German life, with discussions in the German language.
12. GERMAN PRONUNCIATION. One semester. 1 h.
Special drill on the German sounds; the reading of selected German poems.
Prerequisite: Courses 1-4.

13. **GOETHE'S FAUST: PARTS I AND II.** Second semester. 3 h.
Open to graduate students and seniors.
14. **STUDIES IN THE HISTORY OF THE GERMAN NOVEL.** One semester.
3 h. Open to seniors and juniors who read German with facility.
Reading and discussion of selected works.
15. **THE GERMAN NOVELLE.** One semester. 3 h. Open to seniors and juniors who read German with facility.
Reading and discussion of representative stories.
This course alternates with Course 13.
16. **TEACHERS' COURSE.** One semester. 2 h.
The phonetics and pronunciation of German; methods of teaching German to foreigners; examination of grammars and readers; systematic study of one of the texts usually read in high schools.
17. **SCIENTIFIC GERMAN.** Throughout the year. 2 h.
Prerequisite: Course 1-2, or two years of high-school German.
18. **THE HISTORY OF GERMAN LITERATURE FROM THE EARLIEST TIMES TO THE TIME OF KLOPSTOCK.** First semester. 3 h. Open to advanced students who read German with facility.
Lectures, collateral reading, reports.
19. **THE HISTORY OF GERMAN LITERATURE FROM THE TIME OF KLOPSTOCK TO THE PRESENT.** Second semester. 3 h.
Lectures, collateral reading, papers.
20. **GERMANIC HERO-SAGAS.** One semester. 2 h. Open to advanced students.
Lectures, recitations, collateral reading.
21. **GERMANIC MYTHOLOGY.** One semester. 2 h. Open to advanced students.
Lectures, recitations, collateral reading.
Primitive Germanic religion, customs and ideals of life, in their relation to German literature.
22. **GENERAL PHONETICS.** First semester. 2 h.
An introduction to the subject, with a careful consideration of speech-sounds, and of the bearing of Phonetics upon the development of language.

23. POETICS. One semester. 2 h. Open to juniors and seniors.
The aim of poetry; forms of poetry; style; meter.
24. AN INTRODUCTION TO THE STUDY OF LANGUAGE. One semester.
2 h.
Aims and methods of linguistic study. Theories concerning the origin of language; grammatical gender; sound changes.
For courses for graduates only, see page 194.

SCANDINAVIAN

1. DANO-NORWEGIAN. Throughout the year. 3 h. Open to all.
An introduction to the study of the Danish and Norwegian languages and literatures.
2. READING OF SELECTED MASTERPIECES OF NORWEGIAN LITERATURE, especially from the works of Ibsen and Björnson.

GREEK

- 1-2. ELEMENTARY COURSE. Throughout the year. 10:00. 5 h.
Goodwin's Grammar. Xenophon's Anabasis, and Homer's Iliad.
3. HOMER'S ILIAD AND EASY PROSE SELECTIONS. First semester.
10:00. 5 h.
Includes review of grammar.
4. PLATO. Second semester. 10:00. 3 h.
The Apology and Crito and selections from the Phædo.
Prerequisite: equivalent of Courses 1-2 and 3.
5. HOMER'S ODYSSEY. Second semester. 10:00. 2 h.
Prerequisite: equivalent of Courses 1-2 and 3.
6. TRAGEDY. First semester. 11:00. 3 h.
Aeschylus' Prometheus and Sophocles' Antigone.
7. DEMOSTHENES. First semester. 11:00. 2 h.
Philippic and Olynthiac Orations.
8. PLATO. Second semester. 11:00. 3 h.
Interpretation of the Republic with lectures on Platonism.
9. COMEDY. Second semester. 11:00. 2 h.
Aristophanes' Clouds and Frogs.
10. GREEK HISTORIANS. First semester. 3:00. 3 h.
Selected books of Herodotus and Thucydides.

11. PASTORAL POETRY. First semester. 3:00. 2 h.
Theocritus, Bion, and Moschus.
12. LYRIC POETS. Second semester. 3:00. 3 h.
Early lyric poets with introduction to Pindar and Bacchylides.
13. PROSE COMPOSITION. Second semester. 3:00. 2 h.
14. GREEK POETRY IN ENGLISH. First semester. 9:00. 2 h. Knowledge of Greek not required.
Lectures and study of best translations.
15. GREEK DRAMA IN ENGLISH. Second semester. 9:00. 3 h.
Continuation of Course 14.
16. CLASSICAL MYTHOLOGY. First semester. 9:00. 3 h.
Lectures and textbook.
17. GREEK ART. Second semester. 2:00. 2 h.
Lectures and textbook.
18. GREEK CIVILIZATION. Second semester. 10:00. 3 h.
Lectures and readings.
For courses for graduates only, see page 195.

HEBREW

- 1-2. BEGINNERS' COURSE. Throughout the year. 10:00. 3 h.
Study of Genesis, Chapters 1-8.
- 3-4. SECOND-YEAR COURSE. Throughout the year. 1:00. 3 h.
Review of grammar and syntax; translations in Old Testament histories, Psalms, Wisdom Literature, Minor Prophets.

HISTORY

Primarily for Freshmen.

- 1-2. EUROPEAN HISTORY, 376-1789.* Throughout the year. M. W. F.
2:00. 3 h.
The first semester's work will end at the year 1300. Either semester's work may be taken separately. This course is a prerequisite for Courses 7, 8, 19, 20, and 22, and will admit to Courses 9 and 10.
- 3-4. ANCIENT HISTORY TO 800 A. D.* Throughout the year. M. W. F.
3 h.

The first semester's work will deal primarily with the history of Greece; the second primarily with the history of Rome,

* Juniors and seniors receive only partial credit.

concluding with a brief description of characteristic mediæval institutions. Either semester's work may be taken separately. This course is a prerequisite for Courses 13 and 14, and will admit to Courses 9 and 10.

Not Open to Freshmen.

5. THE HISTORY AND LITERATURE OF THE HEBREWS TO 300 B. C.
First semester. 2 h.
6. THE HISTORY AND LITERATURE OF THE JEWS FROM 300 B. C. TO 135 A. D. Second semester. 2 h.
7. THE FRENCH REVOLUTION AND THE NAPOLEONIC ERA. One semester. 2 h.
Prerequisite: Course 1-2.
8. EUROPE SINCE 1815.* Throughout the year. M. W. F. 9:00
3 h.
Prerequisite: Course 1-2.
9. ENGLISH HISTORY. Throughout the year. 3 h.
The political, economic and social history of England.
This course is required by the School of Law for entrance.
Prerequisite: either Course 1-2 or Course 3-4 except for students preparing to enter the School of Law.
- 10-11. HISTORY OF THE UNITED STATES SINCE 1783. Throughout the year. M. W. F. 11:00. 3 h. Either semester's work may be taken separately. This course is prerequisite for Courses 23 and 25. For juniors and seniors.
12. POLITICAL HISTORY OF ATHENS. First semester. 3 h.
13. THE POLITICAL THEORIES OF PLATO AND ARISTOTLE. Second semester. 2 h.
14. THE FALL OF THE ROMAN REPUBLIC. First semester. 3 h.
Prerequisite: Course 4.
15. THE ROMAN EMPIRE. Second semester. 3 h.
Prerequisite: Course 4.
16. THE MEDIAEVAL CHURCH AND THE REFORMATION.* Throughout the year. Tu. Th. 10:00. 2 h. Open on consultation.
The course will deal primarily with the institutional side of the mediæval and reformed churches.

* No credit given for one semester.

17. ENGLISH MEDIAEVAL INSTITUTIONS.* Throughout the year. M. W. F. 10:00. 3 h. Open on consultation.
A detailed study, based largely upon source material, of the manor, the gilds, feudalism, and the institutions of the church during the thirteenth and fourteenth centuries.
18. THE ITALIAN RENAISSANCE. One semester. 2 h.
Special emphasis will be placed upon the artistic and literary side of the Renaissance.
Prerequisite: Course 1-2.
19. THE RENAISSANCE IN NORTHERN EUROPE. One semester. 2 h.
Prerequisite: Course 1-2.
20. ADVANCED MODERN EUROPEAN HISTORY. One semester. 2 h.
A detailed study will be made of some limited phase of modern history, *e. g.*, the Near Eastern question or the history of France or Germany since 1870. The subject will be changed each year and the course may be elected more than once.
Prerequisite: Course 8.
21. A HISTORY OF RUSSIA. One semester. 2 h.
22. THE WESTWARD MOVEMENT. Throughout the year. 2 h.
A study of the Western expansion of the English colonies and the United States.
Prerequisite: Course 10-11.
23. COLONIZATION OF NORTH AMERICA. Throughout the year. M. W. F. 8:00. 3 h.
The course surveys the colonizing activities in the West Indies and North America of Spain, France, the Netherlands, Sweden, and England. The second semester's work deals mainly with the international struggles of the eighteenth century and the American Revolution.
Prerequisite: Course 10-11.
24. HISTORY OF AMERICAN DIPLOMACY. Throughout the year. 2 h.
A survey of the foreign relations of the United States since 1776.
25. RESEARCH COURSE IN THE HISTORY OF THE WEST.* Throughout the year. 2 h.
26. HISTORICAL METHODS AND BIBLIOGRAPHY. First semester. 2 h.
Required of all juniors and seniors majoring in history.

* No credit given for one semester.

27. METHODS OF TEACHING HISTORY. Second semester. 2 h. Required of all students who are preparing to teach history.
28. HISTORIOGRAPHY. First semester. 2 h. Required of all juniors and seniors majoring in history.

For courses for graduates only, see page 196.

COURSES OFFERED DURING THE WAR.

- The European Origins of the War. One semester. 2 h.
- The United States and the War. One semester. 1 h.
- Colorado and the War. One semester. 2 h.

HOME ECONOMICS*

1. ELEMENTARY FOODS. Second semester. 3 h.

Nature and use of foods, their history, production, manufacture, composition, and economic value; principles underlying the preparation of typical foods; practice in fundamental cooking processes.

For students who have not had one unit of cookery in an accredited high school.

2. SELECTION AND PREPARATION OF FOODS. Throughout the year.
3 h.

Principles of selecting foods and methods of preparing them.

Nutritive and economic value of various food combinations.

4. PRINCIPLES OF COOKERY. First semester. 3 h.

A general survey of the principles of cookery and their application to a wide range of food materials. Meal planning and table service.

5. EXPERIMENTAL COOKERY. Second semester. 3 h.

Experimental work in various problems in the field of cookery.

6. DIETETICS. First semester. 5 h.

Principles of human nutrition. Application to needs of individuals and groups under varying conditions. Methods of computing dietaries.

* Credits listed in this department apply only on the B. S. degree.

7. **ELEMENTARY CLOTHING.** First semester. 3 h.

Essentials of sewing applied to household mending, the making of undergarments, simple dresses, etc. Choice of materials, elementary drafting, pattern making.

Required of students who have not had one unit of sewing in an accredited high school.

8-9. **DRESSMAKING.** Throughout the year. 3 h.

Continues the work of Course 7 with broader and more difficult applications. Study of materials; problem of home made and commercial clothing; practical applications.

10. **ADVANCED DRESSMAKING.** First semester. 4 h.

Designing and draping on the form. Advanced work in practical applications.

11. **TEXTILES.** Second semester. 3 h.

Identification of fabrics; microscopic study of fibers; physical and chemical tests; economic phases of the textile industry.

12-13. **HOUSEHOLD MANAGEMENT.** Throughout the year. 3 h.

Organization of the household; the budget and its apportionment; application of principles of scientific management to the household.

14. **CARE OF THE CHILD.** Second semester. 3 h.

This course will give special emphasis to the food and hygiene of the young child.

LATIN

1-2. **ELEMENTARY COURSE.** Throughout the year. 10:00. 5 h.

First Year Book; grammar; Cæsar's Gallic War.

3. **CICERO.** First semester. 1:00. 5 h. For students who enter with two units of Latin, or have taken Course 1-2.

Selected orations; Latin writing, drill in forms and syntax.

4. **VIRGIL.** Second semester. 1:00. 5 h. For students who enter with three units of Latin or have taken Course 3.

The Aeneid, Books I-VI; drill in reading the Latin hexameter, case and verb constructions, and poetic usages.

5. **CICERO.** First semester. 8:00. 3 h.

Cicero, *De Senectute* and *De Amicitia*; the relation of these works to Cicero's other writings; Latin grammar, prose composition.

6. OVID. First semester. 8:00. 2 h.
Selections from Ovid; the influence of Ovid on modern literature; introduction to classical mythology.
7. LIVY. Second semester. 8:00. 3 h.
Selections from the earlier books; historical significance; Latin prose composition.
8. TERENCE AND PLAUTUS. First semester. 11:00. 2 h.
One play of each author; the place of Terence and Plautus in literature; introduction to Roman comedy.
9. HORACE. Second semester. 8:00. 2 h.
The Odes and Epodes; introduction to Latin lyrical poetry; Latin versification.
10. LATIN PROSE. First semester. 8:00. 2 h.
11. TACITUS. Second semester. 8:00. 2 h.
Tacitus, Agricola and Germania; the spread of Roman influence in the West; early civilization of Western Europe.
12. LATIN PROSE AND SIGHT TRANSLATION. Second semester. 9:00. 3 h.
13. LATIN LITERATURE. Throughout the year. 2:00. 3 h.
The outlines of the literature with its historical setting. The course is based on Latin selections.
14. ROMAN HISTORY. First semester. 10:00. 3 h.
Lectures and reports on sources.
Outlines of Roman History; the history of Rome from its foundation to 476 A. D., based on Latin extracts.
15. ROMAN SATIRE. First semester. 8:00. 3 h.
Horace, Juvenal, Persius; the origin and development of satire with a critical estimate of the historical value of the contents.
16. TACITUS AND PLINY. First semester. 8:00. 2 h.
Tacitus, Histories, book I; Pliny, Letters, book X; introduction to the prose of the Silver Latinity; Rome and the provinces.
17. ROMAN COMEDY. First semester. 1:00. 3 h.
Terence and Plautus, six plays; a comparative study of these authors, from the literary as well as the morphological side.

18. RHETORICAL TREATISES. 5 h.

Horace, *Ars Poetica*; Cicero, *De Oratore*, *Brutus*; Quintilian, book X; Tacitus, *Dialogus de Oratoribus*; principles of literary criticism; the debt of the above writers to Greek sources.

19. CATULLUS. First semester. 11:00. 2 h.

Latin lyrical poetry.

20. ROMAN PHILOSOPHY. 5 h.

Lucretius, *De Rerum Natura*; Cicero, *De Natura Deorum*, *De Finibus* and *Tusculanæ*; Seneca, selections; the place of Roman philosophy in the history of philosophy; the part played by these writers individually.

21. ROMAN HISTORY. 63 B. C. to 37 A. D. 3 h.

Sallust, *Catiline*; Cicero, *Letters* (Abbott's selections); Tacitus, *Annals*, books I-VI; Velleius Paterculus, book II.

22. TIBULLUS AND PROPERTIUS. 2 h.

Selected odes; special studies in Latin lyrical poetry.

23. MARTIAL AND PLINY. 2 h.

Selected epigrams and letters; private life under the early Roman Empire.

24. LATIN LITERATURE IN ENGLISH. 3 h.

The course is based on standard translations and is intended for students not taking Latin.

25. LIVY. 2 h. For advanced students.

Book I as a basis for the consideration of the problems of early Roman history.

26. SUETONIUS. 2 h.

Selected lives; introduction to the history of the Empire.

27. TEACHERS' TRAINING COURSE. Second semester. 3 h. For advanced students.

Lectures, reviews of textbooks; practical work in teaching under supervision.

28. ADVANCED LATIN PROSE. 2 h.

Stylistic analysis of Latin authors; the writing of Latin prose; problems in syntax.

29. GREEK AND ROMAN ARCHÆOLOGY. 2 h.

An elementary course in architecture, sculpture, and painting.

30. MINOR LATIN POETS.

Selections from various poets writing later than 69 A. D.
For courses for graduates only, see page 196.

LIBRARY SCIENCE AND PRACTICE

1. LIBRARY SCIENCE AND PRACTICE. Throughout the year. Th. 3:00, lectures; five hours each week, laboratory. 2 h.

Lectures by members of the library staff, and invited members of the profession. The course aims to give an adequate working knowledge of library usage. Visits to neighboring libraries, binderies, and publishing houses supplement lectures and laboratory instruction.

LITERATURE, COMPARATIVE AND ENGLISH

1. ART FORM. Throughout the year. 1 h. Open to all.
Lectures illustrated by lantern slides; recitations.
The sources, effects, and methods of composition in poetry illustrated by reference to architecture, sculpture and painting; the chief art works of every age.
2. THE BEST PROSE OF ALL AGES. Throughout the year. 3 h. Open to all.
3. THE SHORT STORY. Second semester. 2 h. Open to all.
Studies analytical and historical of masterpieces of short-story art by Poe, Hawthorne, Bret Harte, O'Brien, O. Henry, Björnson, de Maupassant, Stevenson, Kipling, and others.
4. PRESENT DAY POETS. 2 h. Open to all.
5. JOURNAL CLUB. Either semester. 1 h. Open to all. The course may be repeated until three hours of credit are obtained.
Reports and informal discussions of current literature.
6. AMERICAN AUTHORS. Throughout the year. Open to freshmen and sophomores.
7. THE HISTORY OF ENGLISH LITERATURE. Throughout the year. 5 h. Not open to freshmen.

Recitations and lectures.

From Anglo-Saxon times to the twentieth century; the chief types of prose and poetry; the principles of literary analysis and criticism; wide reading in English authors. This is

the foundation course for those electing literature as a major. An effort is made to secure good habits of reading and writing.

History of English Literature; readings in English Literature.

8. SHAKESPEARE. Throughout the year. 5 h. Open to graduates and advanced undergraduates.

All the plays attributed to Shakespeare are read during the year; studies in the style, diction, and versification of the different periods; the establishment of the text; interpretation of great dramatic types—history, comedy, tragedy; wide reading and some original research.

9. THE GREAT DRAMA. Throughout the year. 5 h. For graduates and advanced undergraduates.

The international aspects of the English drama; a reading course from the mystery plays to the twentieth century.

10. AMERICAN PLAYS. 2 h. Not open to freshmen.

11. THE ANALYSIS OF PLAY CONSTRUCTION. Throughout the year. 2 h.

One lecture hour; one hour for conferences on writing plays.

12. WORLD DRAMA. Throughout the year. 5 h. For graduates and advanced undergraduates.

The development of the drama from the earliest times to the present; primitive drama; the literary drama of China, Japan, and India; the ancient classical drama; Calderon, Corneille, Racine, Molière, Victor Hugo; Lessing, Schiller, Goethe; Ibsen; Tolstoy; Echegaray; Rostand, Maeterlinck; D'Annunzio; Hauptmann, Sudermann. This is a reading course, including one hundred and twenty-seven plays (in English).

13. LYRIC POETRY. Throughout the year. 5 h. Open to graduates and advanced undergraduates.

An historical survey of lyric poetry from the earliest mention of Greek lyrics to the poets of the late nineteenth century. Attention is directed to the comparative study of particular lyric forms.

14. THE GREAT EPICS. Throughout the year. 5 h. For graduates and advanced undergraduates.

The Iliad, the Odyssey, and the Æneid; the Divine Comedy; the great epics of all ages (in English).

15. MASTERPIECES OF PROSE FICTION FROM THE EARLIEST TIMES. Throughout the year. 5 h. Open to graduates and advanced undergraduates.

Typical masterpieces from the Greek romances to the twentieth century novel.

16. MILTON. First semester. 2 h. For graduates and advanced undergraduates.
17. SHELLEY. 2 h. For advanced students.
18. TENNYSON. Throughout the year. 2 h. For advanced students.
19. BROWNING. 2 h. For advanced students.

The Globe edition of Tennyson; the Cambridge edition of Browning. The Seminary Library contains many volumes of valuable Tennysonianiana presented by members of the class of 1896, and publications of the Browning Society.

20. THE LATER NINETEENTH CENTURY POETS. 2 h. Open to seniors and juniors.

Extensive readings in Clough, Arnold, Rossetti, Morris, Stevenson, Swinburne, Meredith, Patmore, and Wilde.

21. LITERARY FORMS OF TODAY. First semester. 3 h. Open to graduates and advanced undergraduates. Required for a major in literature.

Personal and public letters, précis-writing, sketches, essays, critiques, theses, memoirs, speeches, lectures, orations, stories, verse, dramatization.

Studies in the chief uses of formal language required of college graduates by modern life. Much reading and writing.

Courses 20 and 23 in the Department of Germanic Languages count toward a major in literature.

Freshman composition does not count as a minor for English Literature major.

For courses in English Language, see page 78.

For courses for graduates only, see page 198.

MATHEMATICS

1. COLLEGE ALGEBRA. First semester. 9:00 and 1:00. 5 h. Only three hours allowed to those offering $1\frac{1}{2}$ units of high-school algebra for entrance.

Presupposes 1 unit of high-school algebra.

2. COLLEGE TRIGONOMETRY. Second semester. 9:00. 5 h.
3. COLLEGE ALGEBRA. First semester. 11:00. Second semester. 8:00. 3 h.

Presupposes $1\frac{1}{2}$ units of high-school algebra.

4. PLANE TRIGONOMETRY. First semester. 10:00. Second semester. 10:00. 3 h.

5. COLLEGE ALGEBRA AND TRIGONOMETRY. First semester. 8:00. 5 h.
Presupposes $1\frac{1}{2}$ units of high-school algebra.

6. COLLEGIATE MATHEMATICS. Throughout the year. 5 h.
Presupposes 3 entrance units; preferably, algebra $1\frac{1}{2}$ units and geometry $1\frac{1}{2}$ units.

This is a general course in trigonometry, analytic geometry, and the calculus. It is offered for students who, though not specializing in mathematics, find a real need for some acquaintance with its processes and formulas before they can read satisfactorily important texts and monographs in their major subjects, as in geology, economics, logic.

7. APPLIED GEOMETRY. Second semester. 11:00. 3 h.
Presupposes 1 unit of high-school geometry.
8. ELEMENTARY SOLID GEOMETRY. Second semester. 8:00. 3 h.
9. THEORY OF EQUATIONS. First semester. 10:00. 3 h.
Elementary. Sequence to Course 1 or 3.

10. ANALYTIC GEOMETRY. First semester. 8:00. Second semester. 8:00. 5 h.

Presupposes $1\frac{1}{2}$ units of high-school algebra, and $\frac{1}{2}$ unit of high-school trigonometry, or Course 2 or 4.

11. CALCULUS I. Either semester. 8:00. 5 h.
Prerequisite: Course 10.
12. CALCULUS II. First semester. 9:00. Second semester. 8:00. 5 h.

Prerequisite: Course 11.

13. DIFFERENTIAL EQUATIONS. Second semester. 9:00. 5 h.
14. MATHEMATICAL THEORY OF INVESTMENT. First semester. 10:00. 2 h.
16. FUNDAMENTAL CONCEPTS IN MATHEMATICS. Second semester. 11:00. 3 h.
17. ANALYTIC SOLID GEOMETRY. Second semester. 10:00. 5 h.
18. COMPLEX FUNCTIONS. Second semester. 10:00. 5 h.

19. TEACHING OF MATHEMATICS. First semester. 10:00. 3 h.
20. HISTORY OF MATHEMATICS. Second semester. 11:00. 3 h.
21. PROJECTIVE GEOMETRY. First semester. 10:00. 5 h.
22. MODERN GEOMETRY. Either semester.
23. TRANSCENDENTAL FUNCTIONS. Second semester. 5 h.
24. COURSES IN CONTINUATION OF COURSES 13, AND 18. First semester. Hours and credits as arranged.
25. COURSES IN CONTINUATION OF COURSES 9, 10, AND 12. Second semester. Hours and credits as arranged.

For courses for graduates only, see page 199.

MILITARY TRAINING

COURSES REQUIRED OF ALL MEN STUDENTS IN THE FRESHMEN AND SOPHOMORE YEARS.

1. MILITARY ART. First semester. Three hours a week.
 - (a) Practical. Physical drill; infantry drill, to include the School of the Soldier, Squad and Company; close and extended order. Sighting position and aiming drills; care of rifle and equipment. Gallery practice.
 - (b) Theoretical. Target practice, individual and collective; military organization; map reading; service of security; personal hygiene.
2. MILITARY ART. Second semester. Three hours a week.
 - (a) Practical. Physical drill; infantry drill, to include School of Battalion, special attention devoted to fire direction and control; ceremonies, manuals; bayonet combat; intrenchments; first aid instruction; range and gallery practice.
 - (b) Theoretical. Lectures, general military policy as shown by military history of United States, military obligations of citizenship; service of information; combat. Camp sanitation for small commands.
3. MILITARY ART. First semester. Three hours a week.
 - (a) Practical. The same as Course 2 (a). Combat firing. Collective firing in indoor ranges.
 - (b) Theoretical. Infantry drill to include School of Battalion and combat; Small-Arms Firing Regulations; lectures as in Course 2 (b); map reading; camp sanitation and camping expedients.

4. **MILITARY ART.** Second semester. Three hours a week.

(a) Practical. The same as Course 2 (a). Signaling; semaphore and flag; first aid. Work with sand table by constructing to scale intrenchments, field works, obstacles, bridges, etc. Comparison of ground forms (constructed to scale) with terrain as represented on map; range practice.

(b) Theoretical. Lectures, military history (recent); service of information and security; marches and camps.

ADVANCED COURSES.

5. **MILITARY ART.** First semester. Five hours a week.

(a) Practical. Duties consistent with rank as cadet officers or non-commissioned officers in connection with the practical work and exercises laid down for the unit or units. Military sketching.

(b) Theoretical. Minor tactics; field orders; map maneuvers; company administration; military history.

6. **MILITARY ART.** Second semester. Five hours a week.

(a) Practical. Same as Course 5 (a). Military sketching.

(b) Theoretical. Minor tactics; map maneuvers; elements of international law; property accountability; method of obtaining supplies and equipment.

7. **MILITARY ART.** First semester. Five hours a week.

(a) Practical. Duties consistent with rank as cadet officers or non-commissioned officers in connection with the practical work and exercises scheduled for the unit or units. Military sketching.

(b) Theoretical. Tactical problems, small forces, all arms combined; map maneuvers; court-martial proceedings. International relations of America from discovery to present day; gradual growth of principles of international law embodied in American diplomacy, legislation, and treaties.

Lectures: Psychology of war and kindred subjects. General principles of strategy.

8. **MILITARY ART.** Second semester. Five hours a week.

(a) Practical. Same as Course 7 (a).

(b) Theoretical. Tactical problems; map maneuvers; rifle in war. Lectures on military history and policy.

MUSIC

1. HARMONY. Throughout the year. M. W. F. 11:00. 3 h.
Textbook: Bussler.
2. COURSE 1 CONTINUED. Throughout the year. Tu. Th. 10:00.
2 h.
Textbook: Bussler.
Prerequisite: Course 1.
3. COUNTERPOINT. Throughout the year. Tu. Th. 9:00. 2 h.
Prerequisite: Courses 1 and 2.
4. CANON AND FUGUE. Throughout the year. 2 h.
Prerequisite: Courses 1, 2, and 3.
5. COMPOSITION AND ORCHESTRATION. Throughout the year. 2 h.
Prerequisite: Courses 1, 2, and 3.
6. HISTORY OF MUSIC. Throughout the year. Tu. 3:00. 1 h.
Open to all.
Lectures.
7. AESTHETICS AND PHILOSOPHY OF MUSIC. Either semester. W.
7:30. 1 h. Open only to graduate students and seniors.
Seminar.

PHILOSOPHY

1. HISTORY OF PHILOSOPHY. Both semesters. M. W. F. 9:00. 3 h.
Open to all.
2. INTRODUCTION TO PHILOSOPHY. Both semesters. M. W. F. 11:00.
3 h. Open to all.
3. HISTORY AND PHILOSOPHY OF EDUCATION.* Both semesters.
M. W. F. 10:00. 3 h. Open to all.
4. ETHICS. Both semesters. Tu. Th. 9:00. 2 h. Open to all.
5. LOGIC. First semester. Tu. Th. 10:00. 2 h. Open to all.
6. AESTHETICS.* Second semester. Tu. Th. 10:00. 2 h. Open
to all.
7. METAPHYSICS. Both semesters. Th. 7:00-9:00. 2 h. For ad-
vanced students.
8. HISTORY OF SCIENCE.* Both semesters. Th. 7:00-9:00. 2 h.
Open to all.

* None of these courses count as requirements in Philosophy until basic courses 1, 2, 4 and 5 have been taken.

PHYSICAL EDUCATION

COURSES FOR MEN

No work in Physical Education in addition to Military Training is required. No credit is given for any of the courses except the Teachers' Course.

1. ELEMENTARY GYMNASICS. First semester. M. W. F. Open to all.

Calisthenics; light apparatus work; marching and drills; indoor and outdoor games—soccer, volley-ball, basket-ball, indoor and outdoor baseball, and various gymnastic games.

2. INTERMEDIATE GYMNASICS. Second semester. A continuation of Course 1. Open to all.

Calisthenics; light and heavy apparatus work; indoor and outdoor games—soccer, volley-ball, basket-ball, baseball, track work, tennis, and cross-country running.

3. ADVANCED GYMNASICS. Both semesters. Tu. Th. Open to students who are physically competent.

Heavy apparatus work, advanced calisthenics, gymnastic games, contests of skill and strength, boxing and wrestling.

4. TEACHERS' COURSE. Both semesters. 1 h.

A study of the major branches of sports: football, basket-ball, baseball, track and field athletics, each in season. Lectures on the game, offense, defense, the rules, the several positions, daily programs of practice, methods of coaching. The class instruction is paralleled by practical work.

5. PLAYGROUND COURSE. See page 104.

6. ATHLETICS. First semester. Elective for students who are physically competent.

Football, basket-ball, soccer, and tennis.

7. ATHLETICS. Second semester. Elective for students who are physically competent.

Baseball, soccer, tennis, track and field work.

COURSES FOR WOMEN

One year's work in Physical Education is required of all women in the first year of the College of Liberal Arts. No credit is given for any of the courses except the Playground course.

1. **FRESHMAN COURSE.*** Throughout the year. Three hours a week. Required of freshmen.

- a. Archery, tennis, basket-ball, captain-ball, baseball. Out of doors. September to November.

- b. Elementary Swedish gymnastics—marching, floor work, apparatus work; folk dancing; æsthetic dancing. In gymnasium. November to Spring Recess.

- c. Archery, tennis, baseball, track. Out of doors. Spring Recess to last of May.

In a and c one sport only is required. Students may choose from the group offered.

2. **CORRECTIVE COURSE.** Throughout the year. Three hours a week. Open to all on consultation.

- a. Same as (a) in Course 1.

- b. Corrective Swedish Gymnastics—marching, floor work; corrective apparatus work; folk dancing; æsthetic dancing. In gymnasium. November to Spring Recess.

- c. Same as (c) in Course 1.

3. **RESTRICTED COURSE.** Throughout the year. Three hours a week. Open to all on consultation.

- a. Archery. Out of doors. September to November.

- b. Restricted Swedish gymnastics—marching and floor work; folk and æsthetic dancing. In the gymnasium. November to Spring Recess.

- c. Archery. Out of doors. Spring Recess to last of May.

This course is for students whose condition of health is such that they may not take either of the above courses.

4. **ADVANCED COURSE.** Throughout the year.

Open to upper classmen. Elective.

- a. Athletics. (1) Archery, tennis, baseball. Out of doors. September to November. Two hours a week. (2) Basket-ball. In the gymnasium. November to Spring Recess. Two hours a week. (3) Archery, tennis, baseball. Out of doors. Spring Recess to last of May.

* The restricted and corrective courses may be substituted for this course in cases where conditions of health or posture make such substitutions advisable. This is possible only by permission of the director of the department.

b. **Gymnastics.** Advanced Swedish Gymnastics—marching, floor work, apparatus work. In the gymnasium. November to Spring Recess. Two hours a week.

c. **Dancing.** Advanced æsthetic and interpretative dancing. In the gymnasium. November to Spring Recess. Two hours a week.

Prerequisite: Course 1 or its equivalent.

5. **PLAYGROUND COURSE.** Throughout the year. Three hours a week with additional hours in first aid. 2 h. Elective. Open to both men and women. No credit will be given unless the course is continued through both semesters.

a. **Theory.** (1) Lectures, assigned readings, papers, book reviews. Nature and function of play; economic and sociologic needs for playgrounds; development of playground movement in America; organization of playground movements; practical conduct of playgrounds—equipment, instruction, supervision, activities, aims. (2) **First Aid.** Ten lectures of one and a half hours each. Required of all playground students. Lectures, assigned readings, practice in bandaging. Course given by a physician.

b. **Practical work.** (1) Practice teaching: practice in teaching dances, organized games, team games. (2) Practice in folk dances for all ages; relay races; organized games; team games—volley-ball, captain-ball, basket-ball (women's), indoor baseball.

PHYSICS

1. **GENERAL PHYSICS—MECHANICS AND HEAT.*** First semester. Tu. Th. 10:00. Lectures, two hours; recitations, two hours. 4 h.

Prerequisite: an elementary knowledge of plane trigonometry.

2. **GENERAL PHYSICS—ELECTRICITY, MAGNETISM, SOUND AND LIGHT.*** Second semester. Tu. Th. 10:00. Lectures, two hours; recitations, two hours. 4 h.

* Courses 1 and 2 are an elementary but thorough presentation of the fundamental facts, principles, theories, and applications of modern physics, covering the properties and mechanics of solids, liquids, and gases, and the phenomena of heat, electricity, magnetism, sound, and light. These courses, or their equivalent, are prerequisite for all those that follow. The lectures are fully illustrated by apparatus and by experiments. The recitations are based upon both the lectures and a text-book which the student is expected to study systematically in parallel with the lectures.

Prerequisite: an elementary knowledge of plane trigonometry.

3. **EXPERIMENTAL PHYSICS.*** First semester. One two-hour period per week. 1 h.

Quantitative laboratory work in the subjects of mechanics and heat.

Prerequisite: an elementary knowledge of plane trigonometry.

4. **EXPERIMENTAL PHYSICS.*** Second semester. One two-hour period per week. 1 h.

Quantitative laboratory work in the subjects of electricity, magnetism, sound, and light.

Prerequisite: an elementary knowledge of plane trigonometry.

5. **THEORETICAL MECHANICS—STATICS.** Second semester. M. F. 11:00. 2 h. Taken regularly in the sophomore year.

A study of the equilibrium of particles and rigid bodies; centers of mass; moments of inertia.

Prerequisite: Course 1 and calculus; open, however, to those who are beginning integral calculus the second semester.

6. **THEORETICAL MECHANICS—DYNAMICS.** First semester. M. W. F. 8:00. 3 h. Taken regularly in the junior year.

A study of the motion of particles and rigid bodies. Emphasis is laid upon the fundamental physical principles of the subject and the attempt is made to give the student a certain facility in translating physical conceptions into mathematical symbols and mathematical formulæ into physical ideas.

Prerequisite: Course 1 and calculus.

7. **TEACHERS' TRAINING COURSE IN PHYSICS.** Second semester. 2 h.

A course designed primarily for those who expect to teach physics in secondary schools. Such topics as the proper arrangement of a secondary-school course, laboratory equipment

* It is strongly recommended that courses 3 and 4 be taken in parallel with courses 1 and 2. When not so taken, courses 1 and 2, or their equivalent, must precede. All the above courses are taken regularly in the sophomore year, but they may be taken by freshmen with the requisite preparation. They should be taken as soon as possible by those whose major subject is physics, chemistry, or mathematics.

and instruction, aims, ways and means of teaching the various subjects, things which do and which do not need emphasis, will be considered in lectures, discussions, and reports. Considerable outside reading will be required.

Prerequisite: Courses 1, 2, 3, and 4, or their equivalent.

8. THEORY OF ELECTRICITY AND MAGNETISM. First semester. M. W. F. 11:00. 3 h. Taken regularly in the junior year.

The elements of the mathematical theory of electricity and magnetism with applications to the general theory of instruments of fundamental importance in electrical measurements.

Prerequisite: Courses 2, 5 and 6, or their equivalent, and differential and integral calculus; open, however, to those who are taking Course 6.

9. ELECTRICAL MEASUREMENTS. First semester. Two two-hour periods per week. 2 h. Taken regularly in the junior year.

A laboratory course intended to accompany and to supplement Course 8.

Prerequisite: Courses 2 and 4, or their equivalent.

10. THEORY OF ELECTRICITY AND MAGNETISM. Second semester. 2 or 3 h.

An extension of Course 8, devoted chiefly to alternating current theory, problems and applications. Courses 8 and 10 are designed to furnish a thorough knowledge of fundamental principles and conceptions and a preparation for the study of advanced electrodynamics.

Prerequisite: Course 8, differential and integral calculus.

11. PROPERTIES OF MATTER. Second semester. Hours and credits to be arranged. Omitted 1918-1919.

Lectures on molecular physics and properties of matter with advanced laboratory work on selected problems of considerable experimental difficulty.

Prerequisite: Courses 1 to 6 inclusive, calculus.

12. HEAT AND THERMODYNAMICS. First semester. Lectures and recitations. 2 h. Omitted 1918-1919.

A study of the more important phenomena of heat and elementary thermodynamics.

Prerequisite: Courses 1, 2, and calculus.

13. **LIGHT.** First semester. Lectures, 1 hour; laboratory, 6 hours.
3 h.

A course designed to give the student a critical knowledge of the fundamental phenomena of light. The laboratory work consists of accurate measurements in dispersion, interference, diffraction and polarization.

Prerequisite: Courses 1 to 4 inclusive, and calculus.

14. **ADVANCED ELECTRICAL MEASUREMENTS.** Second semester. Hours and credit to be arranged.

Laboratory work on selected electrical problems of considerable difficulty, requiring a rather advanced knowledge of the theory of electricity and magnetism.

Prerequisite: Courses 8, 9, and calculus.

15. **WIRELESS TELEGRAPHY.** First semester. 3 h.

A practical course in the theory and methods of radio communication for the aid of those wishing to become wireless operators.

Prerequisite: Permission of the instructor.

16. **THEORY AND USE OF OPTICAL INSTRUMENTS.** Second semester.
3 h.

A course designed to give a practical knowledge of the common types of optical instruments, particularly of those instruments used in the naval and military services.

Prerequisite: College Physics.

20. **DESCRIPTIVE ASTRONOMY.** First semester. Tu. Th. 9:00. 2 h.

A course conducted by means of lectures, recitations and a text. It is designed as a complete course for those wishing a general knowledge of the principal facts, theories and methods of astronomy and provides a necessary introduction to Course 21. The lectures are illustrated by slides, models, and apparatus. The telescope will be used occasionally.

Prerequisite: an elementary knowledge of trigonometry.

21. **INTRODUCTION TO MATHEMATICAL ASTRONOMY.** Second semester.
3 h. Omitted 1918-1919.

A course dealing with selected portions of spherical, practical, and theoretical astronomy involving mathematical treatment of elementary and intermediate difficulty.

Prerequisite: Courses 6, 20, and calculus; differential equations advised.

For courses primarily for graduates, see page 200.

PSYCHOLOGY

1. **GENERAL PSYCHOLOGY.** (Education 1.) Two sections. First semester. M. W. F. 11:00, 1:00, with an additional hour to be arranged for recitations and conferences. 3 h.

This course gives, by means of lectures, recitations, experiments, and demonstrations, a general survey of the essential facts and fundamental laws of mind. It is prerequisite to all other courses in psychology and to the courses in education. The student who expects to make psychology or education a major should take this course in his sophomore year.

2. **COMPARATIVE PSYCHOLOGY.** (Education 2.) Second semester. M. W. F. 2:00. 3 h. Continuation of Course 1.

A systematic study of mental development in the race and in the individual. The course will sketch the development of the nervous impulse, of animal sense organs with reference to their habits, of instincts and intelligence in animals, and in cases of arrested development. With these simpler facts as a basis the development of mental functions in the individual in childhood and adolescence will be discussed with reference to educational theory.

3. **ADVANCED PSYCHOLOGY.** First semester. Tu. Th. 9:00. 2 h. Lectures, discussions, readings, and a thesis.

An intensive study of selected problems; introspective exercises and an analytic study of mental phenomena.

Prerequisite: Course 1 or its equivalent.

4. **PATHOLOGICAL PSYCHOLOGY.** Second semester. Tu. Th. 9:00. 2 h. Open on consultation.

Lectures, readings, and a thesis.

Disorders of sensation, memory, imagination, association, the emotions and volition. As Course 2 traces the development of mental functions this course will discuss the order of their impairment. Mental hygiene and a study of such psychoses as throw light on the general and genetic problems of psychology.

Prerequisite: two courses in psychology.

- 5-6. **EXPERIMENTAL PSYCHOLOGY.** Throughout the year. Tu. Th. 1:00-3:00, laboratory; 3:00, lecture. 3 h.

This course serves as an introduction to experimental

psychology and aims to familiarize the student with modern psychological methods, apparatus, and results.

First semester. Typical experiments and demonstrations in the psychology of the senses, feeling and movement, with a study of individual differences.

Second semester. Experiments in perception and the higher mental processes; time, intensity, and extensity of mental phenomena; mental and physical tests and measurements; statistical methods.

7. EDUCATIONAL PSYCHOLOGY. (Education 2.) Second semester.

M. W. F. 1:00. 3 h. Continuation of Course 1.

Lectures, readings, and a thesis.

The principles of psychology, and the results of experimental pedagogy which are modifying the course of study and methods of instruction in the older schools of this country will be presented in this course. It is recommended that those students who are primarily interested in education take this course as a continuation of Course 1.

Prerequisite: Course 1, or its equivalent.

8. THE PSYCHOLOGY OF GRAMMAR-SCHOOL AND HIGH-SCHOOL SUBJECTS. Second semester. Tu. Th. 10:00. 2 h.

Lectures, recitations and a thesis.

This course describes the mental functions involved in the mastery of each school subject of grammar-school and high-school grade. The topics will be discussed from the point of view of classroom practice, then from that of experimental inquiry, and finally from the point of view of the causes of failure in different subjects. The purpose of the course is to apply the principles of psychology directly to teaching.

9. THE PSYCHOLOGY OF ADVERTISING. First semester. Th. 11:00. 1 h.

Laboratory exercises and recitations. The course is introductory to systematic courses in Psychology.

The strength of advertisements of various classes will be tested by a rather accurate statistical method. The same method will be applied to advertisements written by students. Size, position, medium, headlines, legibility and various other problems of advertising will be studied.

10. MENTAL TESTS. Second semester. Th. 11:00. 1 h.

Lectures, exercises, and readings.

The more important and practical tests of the senses and intelligence will be presented and discussed. Such physical tests will be selected for discussion as are of especial importance to teachers.

For courses for graduates only, see page 202.

ROMANCE LANGUAGES

FRENCH

- 1-2. BEGINNERS' COURSE. Throughout the year. 8:00, 9:00, 1:00.
5 h.

Grammar, pronunciation, translation, dictation.

- 3-4. SECOND-YEAR READING COURSE. Throughout the year. M. W. F.
9:00, 2:00. 3 h.

Modern French stories and plays to be selected from standard authors of the nineteenth century; selected lyrics.

Prerequisite: Course 1-2, or two years of high-school French; students are advised to take Course 3a-4a with Course 3-4.

- 3a-4a. PROSE COMPOSITION AND CONVERSATION. Throughout the year.
Tu. Th. 9:00. 2 h.

Completion of French grammar; phonetics.

Prerequisite: Course 1-2, or two years of high-school French; students are recommended to take Course 3-4 with Course 3a-4a.

5. SEVENTEENTH CENTURY FRENCH. First semester. M. W. F.
11:00. 3 h.

Corneille, Racine, Molière, Mme. de la Fayette; advanced prose composition.

Prerequisite: Courses 3-4 and 3a-4a.

6. THE ROMANTIC SCHOOL. Second semester. M. W. F. 11:00. 3 h.
Victor Hugo, Lamartine, De Musset; modern poetic drama of Rostand; advanced prose composition.

7. HISTORY OF FRENCH LITERATURE. First semester. M. W. 11:00.
2 h.

Lectures and reports on assigned readings. The Eighteenth Century. Abry-Audic, *Histoire illustrée de la Littérature Française*; Vreeland and Michaud's *Anthology of French Prose and Poetry*.

8. HISTORY OF FRENCH LITERATURE. Second semester. M. W.
11:00. 2 h.
Lectures and reports on assigned readings. The Sixteenth Century. Abry-Audic, *Histoire illustrée de la Littérature Française*.
9. FRENCH LYRIC POETRY. Second semester. 2 h.
10. FRENCH SHORT STORIES. First semester. 2 h.
With study of the novel.
11. FRENCH DRAMA. Second semester. 2 h.
From the beginnings to the present day.
12. FRENCH LITERARY CRITICISM. Second semester. 2 h.
French literature from the point of view of Sainte Beuve, Scherer, Taine, Faguet, Anatole France, etc.
13. SYNTAX OF THE FRENCH VERB. Second semester. 1 h.
Based on Armstrong's *Syntax of the French Verb*, with assigned readings.
For courses for graduates only, see page 202.

SPANISH

- 1-2. BEGINNERS' COURSE. Throughout the year. 8:00, 9:00, 1:00.
5 h.
Grammar, punctuation, translation, dictation.
- 3-4. SECOND-YEAR READING COURSE. Throughout the year. M. W. F.
10:00. 3 h.
Modern Spanish stories and plays to be selected from standard authors of the nineteenth century.
Prerequisite: Course 1-2 or two years of high-school Spanish; students are recommended to take Course 3a-4a with Course 3-4.
- 3a-4a. PROSE COMPOSITION AND CONVERSATION. Throughout the year.
Tu. Th. 10:00. 2 h.
Prerequisite: Course 1-2 or two years of high-school Spanish; students are recommended to take Course 3-4 with Course 3a-4a.
5. NINETEENTH CENTURY DRAMA AND NOVEL. First semester.
M. W. F. 9:00. 3 h.
One hour of prose composition.
Prerequisite: Courses 3-4 and 3a-4a.

6. SEVENTEENTH CENTURY DRAMA AND NOVEL. Second semester.
M. W. F. 9:00. 3 h.

Calderon, Lope de Vega, Alarcon, Cervantes, one hour of prose composition.

For courses for graduates only, see page 203.

ITALIAN

- 1-2. BEGINNERS' COURSE. Throughout the year. 1:00. 3 h.

Grammar, pronunciation, translation, dictation.

3. DANTE'S DIVINE COMEDY. First semester. 2 h.

4. ALFIERI AND GOLDONI. Second semester. 2 h.

For courses for graduates only, see page 203.

NOTE—Students are recommended to take up the Romance Languages in the following order: French, Spanish, Italian. They should not elect courses simultaneously in Spanish and Italian without consulting the instructor.

ELECTIVES IN THE PROFESSIONAL SCHOOLS

In accordance with the general plan outlined on page 56, the courses tabulated below may be elected in the professional schools.

COLLEGE OF ENGINEERING

The following subjects in the College of Engineering may be taken by all students in the College of Liberal Arts:

Mechanical Drawing, 3; Freehand Drawing, 2; Descriptive Geometry, 3; Surveying, 8; Least Squares, 2; Applied Mechanics, 4; Graphic Statics, 3; Kinematics, 2; Hydraulics, 3; Thermodynamics, 2; Dynamo Electric Machinery, 4.

SCHOOL OF LAW

Students in the College of Liberal Arts in their fourth year who declare their intention of proceeding to the degree LL.B. in the University of Colorado, may be allowed credit for twenty-two hours on the completion of all work required in the freshman year of the School of Law.

SCHOOL OF MEDICINE

The two degrees of M.D. and A.B. may be conferred on the completion of seven years' work, one year's credit (30 hours) being allowed on the completion of the full freshman work in the School of Medicine.

Under this arrangement a student would naturally choose either zoology or chemistry as a group major.

Students in the junior or senior year in the College of Liberal Arts, on the approval of their major professor and the Dean, may be allowed to elect up to thirty hours in the School of Medicine from the following subjects: Anatomy, 9; Histology and Embryology, 8; Freshman Physiology, 8; Sophomore Physiology, 2; Bacteriology, 5; Advanced Bacteriology, 3; Biochemistry, 8; Advanced Biochemistry, 2.

COLLEGE OF COMMERCE

FACULTY

FREDERICK A. BUSHEE, Ph.D.,
Director of the College of Commerce.

The Faculty of the College of Commerce consists of Professors and Instructors whose work contributes to the courses.

GENERAL STATEMENT

FUNCTION

The College of Commerce was opened September, 1906. Its purpose is to provide professional training for the practical demands of business. It aims to prepare men for careers in Domestic and Foreign Commerce and Banking, Insurance, Transportation, Trade and Industry, Journalism, and in branches of the Public Service, like the Consular, in which a knowledge of business is essential. Heretofore universities and colleges have done all they could for the young man who wishes to become a minister, teacher, lawyer, physician, journalist or engineer. The College of Commerce is developed in response to the demands of (1) enlarged commercial operations, (2) the public service, (3) the desire of parents to give their sons a college education and at the same time prepare them for their life work in business.

It is well known that the knowledge of the details of any particular line of business can be acquired only by actual experience. But the broad training given students in this department of the University will enable them to acquire the routine technicalities of any concern more easily than those whose minds have not been made flexible and acute by systematic training. They will thus the more readily assume positions of leadership and responsibility in the business world.

The curriculum of the College of Commerce is prepared with the following aims in view: (1) To furnish a certain amount of culture work which is the mark of college training. (2) To familiarize the student with the nature and workings of the industrial organism. This is attempted by studies in commercial geography, economics and history of commerce, transportation, banking, business organization and management. (3) To impart a certain amount of knowledge of the physical and chemical sciences and their applications to the industrial arts. (4) To give an acquaintance with the articles of commerce and the various industrial processes through which they pass. (5) To make the student acquainted with the principles of commercial law. (6) To supply an equipment in modern languages. (7) To afford an opportunity to acquire some knowledge of a particular line of trade.

ORGANIZATION

The College of Commerce offers four courses: 1. Banking. 2. Manufactures. 3. Journalism. 4. Trade, Transportation and Consular Service.

ADMISSION AND FEES

The requirements for admission and the fees are the same as for the College of Liberal Arts. See pages 26, 27, 33.

SUBJECTS IN THE COLLEGE OF COMMERCE*

(REQUIRED FOR GRADUATION.)

FRESHMAN YEAR

	I.	II.	III.	IV.
	Banking	Mfrs.	Jour.	Trade, Consular Service, etc.
ENGLISH LANGUAGE..	6	6	6	6
SCIENCE	10	Chem. } 10	10	10
HISTORY	6	6	6	6
FRENCH, GERMAN OR SPANISH	10	10	French } 10	10
REQUIRED PHYSICAL OR MILITARY TRAIN- ING .....	..	..	..	..
	32	32	32	32

SOPHOMORE YEAR

MATH., SCIENCE.....	Math. } 10	Math. } 10	Biol. } 4	Ec. Bot. } 3
PSYCHOLOGY .....	..	..	6	6
HISTORY OR ECON....	10	10	10	10
FREE ELECTIVES.....	10	10	10	11
REQUIRED MILITARY TRAINING .....	..	..	..	..
	30	30	30	30

* In addition to regular courses in the departments open to election, provision will be made for lectures on current problems, and practical topics by prominent business men.

JUNIOR AND SENIOR YEARS

LAW	10	10	10	10
ECONOMICS	20	20	20	20
ENGLISH LANGUAGE AND LITERATURE OR CLASSICS .....	..	..	20	..
PHYSICS .....	..	10	..	..
FREE ELECTIVES.....	28	18	8	28
	—	—	—	—
	58	58	58	58

The following courses are especially recommended for students in the College of Commerce:

Principles of Advertising.

Business Organization and Scientific Management.

History of Commerce.

Commercial Geography.

Economic History of the United States.

Taxation.

Transportation.

Corporations.

Money and Banking.

Journalism.

Diplomatic and Consular Service.

Modern Accounting.

Life Insurance.

Mathematical Theory of Investments.

For a further description of these courses, see departments of Mathematics and Economics and Sociology in the College of Liberal Arts.

COLLEGE OF EDUCATION

FACULTY

FRANK E. THOMPSON, A.B.,

Director of the College of Education.

The Faculty of the College of Education consists of Professors and Instructors in the College of Liberal Arts whose work contributes to the various courses.

GENERAL STATEMENT

ORGANIZATION

A College of Education, to be a division of the College of Liberal Arts, was authorized by the Board of Regents in January, 1908. The report of the committee on a course of study was adopted in April, and the College was regularly opened for work in September of that year.

FUNCTION

It is intended that this College shall provide systematic and comprehensive training for those who may choose education as a *profession*. That there may be such a profession becomes every year more apparent, and it becomes apparent, too, that preparation for service in it must be as complete as for service in other professions. No human endeavor is more important than education; no class should be more carefully prepared than teachers. The need of the present time, expressed in most quarters in a demand, is that many of the teachers in the elementary schools, all of the teachers in the high schools, and all persons engaged in supervision of instruction shall have as a minimum of scholarship the A.B. degree, or its equivalent, and shall have made intensive study of the history, theory and practice of education. There is need in each state for at least one professional school of collegiate rank which shall afford opportunity for training, both in theory and practice, for teaching, supervisory and administrative positions in elementary, secondary and normal schools.

The College of Education is designed to satisfy this need; it is a device of organization and administration to secure for the teacher studies along pertinent lines and in right proportions and sequence. The student looking toward teaching as a profession is assisted and directed in the choice and prosecution of his work from the time of his matriculation until his graduation. He does not sacrifice anything of the culture of the Liberal Arts course.

DESIGN OF CURRICULUM

The curriculum is designed to furnish to the prospective teacher who would be thoroughly equipped for his work:

1. Courses calculated to give sound scholarship and that culture rightly expected of the college graduate.
2. Courses in the subjects he expects to teach, of such character and so organized in sequence that when graduated he will be in some measure an authority in these subjects.
3. Courses that will give knowledge of:
 - a. The constitution and needs of society.
 - b. Child and adult natures and their possibilities for modification.
 - c. The educational values of the various school subjects.
 - d. The art of instruction—this knowledge to be both general and concrete and to come in large measure from actual practice in teaching.
 - e. Educational history and its significance, both for the present and the future.

ADMISSION, FEES, AND ADVANCED STANDING

See pages 26, 27, 33.

COURSES OF STUDY LEADING TO THE DEGREE BACHELOR OF ARTS AND A BACHELOR'S DIPLOMA IN EDUCATION

The course of study of the College of Education covers a period of four years, 120 hours of credit in addition to the required Military training or physical education of the first two years, being required for graduation. Graduates receive the degree of Bachelor of Arts and a Bachelor's Diploma in Education, which latter certifies that the holder has specialized in the theory and art of education.

The general regulations of the College of Liberal Arts apply in the College of Education.

The course of study is distributed as follows:

English Language	6 hours
Classics and Mathematics, Mathematics and Science, or Science and Classics.....	15 hours
History or Economics	6 hours
Psychology (General and Educational).....	6 hours
History and Philosophy of Education.....	6 hours
Principles of Education.....	3 hours

Public Education: Its Organization and Management	3 hours
Principles and Practice of Teaching.....	6 hours
Principles of Economics, or additional Education or Psychology, or Sanitary Science, or Sociology	6 hours
Group Electives, Major and Minors (subjects the student expects to teach).....	50 hours

PREFERRED SCHEDULE

FRESHMAN YEAR

1. ENGLISH LANGUAGE	6
2. CLASSICS, MATHEMATICS OR SCIENCE.....	10
3. HISTORY OR ECONOMICS	6
4. GROUP OR FREE ELECTIVES.....	8
5. REQUIRED MILITARY OR PHYSICAL TRAINING.....	
	<hr/> 30

SOPHOMORE YEAR

6. CLASSICS, MATHEMATICS OR SCIENCE.....	5
7. a. PSYCHOLOGY	6
b. HISTORY OF EDUCATION.....	6
8-9. GROUP OR FREE ELECTIVES.....	13
REQUIRED MILITARY TRAINING	
	<hr/> 30

JUNIOR YEAR

PRINCIPLES OF EDUCATION AND PUBLIC EDUCATION.....	6
ELECTIVES (in Education group).....	3-6
10. GROUP ELECTIVES (subjects student intends to teach)	20-15
11. FREE ELECTIVES	6-3
	<hr/> 30

SENIOR YEAR

PRINCIPLES AND PRACTICE OF TEACHING.....	6
ELECTIVES (in Education group).....	0-3
12. GROUP ELECTIVES (subjects student intends to teach)	20-15
13. FREE ELECTIVES	9-6
	<hr/> 30

GROUPS OF MAJORS AND MINORS

The purpose of the group elective requirement is to secure on the part of the teacher a thorough and systematic knowledge of the subject or subjects he proposes to teach. Usually the teacher in the secondary school is required to teach two or more subjects. Hence it is desirable that he should have a careful and extensive preparation in one subject and sufficient preparation for teaching at least the elementary steps of two or three additional subjects.

The groups of majors and minors are uniform with those of the College of Liberal Arts. See page 59.

TEACHERS APPOINTMENTS OFFICE

See page 46.

STATE DIPLOMAS

The 17th General Assembly enacted House Bill No. 423, in which Sections 4 and 7 provide as follows:

Sec. 4. The State Board of Education shall issue State diplomas upon application, without examination, to applicants who shall be graduates of colleges situated within the State of Colorado, which maintain a standard four-year course of collegiate work and require four standard years of high-school work or its equivalent for admission, and who shall also exhibit evidence satisfactory to the State Board of Education of good moral character, and who shall also present evidence to the State Board of Education that they have twenty-four months of successful teaching experience, and who shall also produce evidence satisfactory to the State Board of Education, of professional training equivalent to at least one-sixth of a standard four-years' college course in at least three of the following groups of subjects, one of which shall be Practice Teaching, to-wit:

- (1) General and Educational Psychology.
- (2) History of Education.
- (3) Science and Principles of Education.
- (4) Practice Teaching and Special Methods.
- (5) Organization and Management of Schools.
- (6) Philosophy, Sociology and Anthropology.

Sec. 7. State diplomas, granted under the provisions of this act, shall license the holders thereof to teach in the public schools of any county, city, town, or district in the State without the neces-

sity of any other examination for a period of five years, unless sooner revoked by the State Board of Education, and at the expiration of said time, the same may be renewed for a like period of five years in the discretion of the State Board of Education, and at the expiration of this time, the same may be renewed for life upon presentation to the State Board of Education of satisfactory evidence of professional growth and efficiency; *Provided*, That the State Board of Education shall issue upon application, without examination, to those persons who possess the qualifications set forth in Section 4 of this act, experience in teaching alone excepted, a temporary, non-renewable certificate to teach for five years in the public schools of Colorado.

COLLEGE OF HOME ECONOMICS AND SOCIAL SERVICE

FACULTY

LAWRENCE W. COLE, Ph.D.

Director of the College of Home Economics and Social Service.

The Faculty of the College of Home Economics and Social Service consists of Professors and Instructors in the College of Liberal Arts, School of Medicine, College of Pharmacy, and the Training School for Nurses, whose work contributes to the various courses.

REGULAR COURSES

FUNCTION

The courses of study in the College of Home Economics and Social Service are designed for three classes of students: (a) Those who desire a four years' course in Household Science and Art in preparation for the management of a home or for teaching these subjects. A wise selection of electives permits this preparation to be so supplemented by arts courses as to constitute a liberal education. (b) Those who desire a brief course preparatory to entering a training school for nurses. (c) Those who desire to enter social service activities, such as belong to the work of charitable and corrective institutions, social settlements, etc.

ADMISSION AND FEES

Entrance requirements and fees for matriculation are those for admission to the College of Liberal Arts, but fees for materials used and breakage will be charged for certain laboratory courses in Home Economics. See pages 26, 27, 33.

DEGREE AND CERTIFICATE

Those who complete satisfactorily a four years' course in Home Economics will receive the B.S. degree.

The courses preparatory to nursing and social service are so arranged that students will have preliminary training of considerable value even if obliged to drop the work at the close of the first year. A certificate showing the work done will be issued to students who complete either one or two years of the course.

COURSE IN HOME ECONOMICS*

FRESHMAN YEAR

FIRST SEMESTER

SECOND SEMESTER

ENGLISH	3	ENGLISH	3
INORGANIC CHEMISTRY	5	INORGANIC CHEMISTRY	5
†GARMENT MAKING	3	†FOODS	3
ELECTIVES	5	ELECTIVES	5
PHYSICAL EDUCATION		PHYSICAL EDUCATION	
	16		16

* In the year 1918-1919 only the first three years of this course will be offered. For description of courses see page 91.

† Required of students who do not offer either household science or art for entrance.

SOPHOMORE YEAR

FIRST SEMESTER		SECOND SEMESTER	
ORGANIC CHEMISTRY	4	ECONOMIC BOTANY	3
SELECTION AND PREPARATION OF FOODS	3	SELECTION AND PREPARATION OF FOODS	3
PSYCHOLOGY	3	CHILD PSYCHOLOGY	3
ELEMENTARY ART AND DESIGN	2	ELEMENTARY ART AND DESIGN	2
BACTERIOLOGY	3	ELECTIVES	6
ELECTIVES	2		
<hr/>		<hr/>	
17		17	

JUNIOR YEAR

FIRST SEMESTER		SECOND SEMESTER	
PHYSIOLOGY (LECT.)	3	PHYSIOLOGICAL CHEMISTRY	4
*PHYSIOLOGY (LAB.)	2	TEXTILES	3
PRINCIPLES OF COOKERY	3	DRESSMAKING	3
THE HOUSE, ITS FURNISHING AND DECORATION	2	ELECTIVES	3 or 6
DRESSMAKING	3		
ELECTIVES	3		
<hr/>		<hr/>	
14 or 16		13 or 16	

SENIOR YEAR

FIRST SEMESTER		SECOND SEMESTER	
HOUSEHOLD MANAGEMENT	3	HOUSEHOLD MANAGEMENT	3
DIETETICS	5	*EXPERIMENTAL COOKERY	3
*ADVANCED DRESSMAKING	4	*TAILORING	3
SOCIOLOGY	2	CARE OF THE CHILD	2
<hr/>		<hr/>	
14		11	

* Elective.

COURSE PREPARATORY TO SOCIAL SERVICE

FIRST YEAR

FIRST SEMESTER

ENGLISH	3
CHEMISTRY	5
SANITARY SCIENCE	2
ANATOMY	3
PRINCIPLES OF ECONOMICS	3
PRINCIPLES OF NURSING	2
<hr/>	
	18

SECOND SEMESTER

ENGLISH	3
CHEMISTRY	5
HYGIENE	2
PHYSIOLOGY	3
ECONOMIC HISTORY OF THE UNITED STATES	3
<hr/>	
	16

SECOND YEAR

FIRST SEMESTER

LABOR PROBLEMS	3
PSYCHOLOGY (GENERAL)	3
SOCIAL ETHICS	3
BACTERIOLOGY	4
INFANT HYGIENE	1
ELECTIVE	2
<hr/>	
	16

SECOND SEMESTER

PROBLEMS IN SOCIOLOGY	2
PSYCHOLOGY (EDUCATIONAL)	3
ACCOUNTING	3
INFANT HYGIENE	1
MATERIA MEDICA	2
CLINICAL LABORATORY METHODS	1
ELECTIVE	2
<hr/>	
	14

COLLEGE OF ENGINEERING

FACULTY

*LIVINGSTON FARRAND, A.M., M.D., LL.D., President of the University.

GEORGE NORLIN, Ph.D., Acting President of the University.

†MILO S. KETCHUM, C.E., Dean; Professor of Civil Engineering.

HERBERT S. EVANS, E.E., Acting Dean; Professor of Electrical Engineering.

JOHN A. HUNTER, M.E., Professor of Mechanical Engineering.

WILLIAM BLACK, M.E., Professor of Steam and Gas Engineering.

JOHN BERNARD EKELEY, Ph.D., Sc.D., Professor of Chemistry.

OLIVER C. LESTER, Ph.D., Professor of Physics.

‡HARRY A. CURTIS, B.S. (Ch.E.), Ph.D., Professor of Physical Chemistry.

JAMES A. MERRITT, Captain U. S. A., Retired, Professor of Military Science and Tactics.

DAVID R. JENKINS, E.E., Director of Electrical Standardizing Laboratory; Assistant Professor of Electrical Engineering.

§WHITNEY C. HUNTINGTON, C.E., Assistant Professor of Civil Engineering.

HOWARD E. PHELPS, C.E., Assistant Professor of Civil Engineering.

FRANK S. BAUER, M.E., Assistant Professor of Mechanical Engineering.

FRANK G. ALLEN, B.S. (M.E.), Assistant Professor of Engineering Drawing.

CHARLES S. SPERRY, A.B., C.E., Assistant Professor of Engineering Mathematics.

‡IVAN C. CRAWFORD, C.E., Assistant Professor of Civil Engineering.

HERBERT B. DWIGHT, E.E., Assistant Professor of Electrical Engineering.

JAY W. WOODROW, Ph.D., Assistant Professor of Physics.

* On leave of absence, June, 1917, to September, 1918, for war service.

† On leave of absence, second semester, 1917-1918, for war service.

‡ On leave of absence for war service.

§ Acting Professor of Civil Engineering and Assistant Dean during the absence of Dean Ketchum.

PAUL M. DEAN, Ph.D., Assistant Professor of Chemistry.

CHARLES M. MCCORMICK, E.E., Instructor in Electrical Engineering.

JAMES L. MERRILL, B.S. (C.E.), Instructor in Engineering Drawing.

WALTER F. MALLORY, B.S. (M.E.), Instructor in Mechanical Engineering.

*CLARENCE L. ECKEL, B.S. (C.E.), Instructor in Civil Engineering.

JOHN J. FLACH, B.S. (E.E.), Instructor in Engineering Mathematics.

CLAIR V. MANN, B.S. (C.E.), Instructor in Engineering Mathematics.

*WILLARD W. RUSK, B.S. (C.E.), Instructor in Civil Engineering.

ELLERT L. McGRATH, B.S. (C.E.), Instructor in Engineering Mathematics.

PHILIP B. McDONALD, B.S., E.M., Instructor in Engineering English.

CHARLES A. ROUSE, A.M., Instructor in Engineering English.

CARL KNOETTGE, A.B., B.S. (C.E.), Instructor in Civil Engineering.

WAYNE S. BEATTIE, B.S. (M.E.), Instructor in Mechanical Engineering.

LESLIE E. MINER, B.S., Instructor in Civil Engineering.

JOHN F. GREENE, B.S. (C.E.), Instructor in Civil Engineering.

LEWIS M. BECKER, B.S. in M.E., Instructor in Mechanical Engineering.

†RUSH E. THOMAS, B.S. (C.E.), Instructor in Civil Engineering.

†PARKER R. WHITNEY, B.S. (C.E.), Instructor in Civil Engineering.

ARTHUR L. EDGECOMB, Instructor in Telegraphy.

JOHN H. V. FINNEY, B.S. (E.E.), Instructor in Physics.

OSCAR A. RANDOLPH, Ph.D., Instructor in Physics.

HORACE B. VAN VALKENBURGH, M.S., Instructor in Chemistry.

CHARLES M. SCHLOSS, Assistant in Electrical Engineering.

PROFESSORS AND INSTRUCTORS IN OTHER DEPARTMENTS

Giving Instruction in the College of Engineering.

FREDERICK A. BUSHEE, Ph.D., Professor of Economics and Sociology.

ARNOLD J. LIEN, Ph.D., Professor of Political Science.

PHILIP G. WORCESTER, A.M., Assistant Professor of Geology.

* On leave of absence for war service.

† Second semester, 1917-1918.

GENERAL STATEMENT

PURPOSE

The College of Engineering was established by the Regents in 1893. The aim in engineering education is to give a thorough training in science, mathematics, language, and mechanics, and in addition to give fundamental courses in engineering so that the graduate may be prepared to enter the profession of engineering.

The work of the first two years of all courses, with a few minor exceptions, is the same. It is aimed in these years to lay a broad foundation for the more specialized work of the last two years. To this end the work is largely theoretical in character, and comprises courses in mathematics, physics, mechanical drawing, rhetoric, and the elements of engineering subjects. Class-room and lecture work is supplemented wherever practicable by laboratory courses.

In the last two years the work is more specialized, and the fourth year is almost entirely devoted to technical work in the several branches of Engineering.

REQUIREMENTS FOR ADMISSION

While the regular time for entrance to the College of Engineering is the opening of the first semester, the subjects are repeated in such a manner that students entering at the opening of the second semester may proceed with their work without loss of time.

For details with reference to admission see pages 26, 28.

ADMISSION TO ADVANCED STANDING

Students from other institutions will be admitted to any class not later than the first term of the senior year on passing examinations in the subjects given in the preceding years in the College of Engineering, or on presentation of satisfactory certificates, showing that the required work has been done in other technical schools. A certificate of honorable dismissal will also be required.

Graduates from other colleges will be admitted without examination, and allowed to pursue such courses as their previous work will permit.

By proper election of subjects in the collegiate course, such as sciences, mathematics, and languages, a graduate of the College of

Liberal Arts can obtain his engineering degree in two years. Such a course affords a very broad general training, and is to be highly recommended. Students who expect to complete both the arts and engineering courses should consult the Dean of the College of Engineering before registering in the University.

DEGREES

Upon the satisfactory completion of the prescribed and elective work in any course, the degree, Bachelor of Science in the course pursued, will be conferred.

The degree Master of Science (M.S.) is given upon completion of one year's graduate work in residence after having obtained the degree Bachelor of Science in Engineering. The year's work requires thirty (30) semester hours' credit, of which at least six (6) hours shall be devoted to a thesis.

A candidate for the degree Master of Science in Sanitary Engineering must have received the degree B.S. in Engineering from this University; or if graduated elsewhere, he must satisfy the faculty that he possesses equivalent attainments. In his previous work he must have included courses in Elementary Bacteriology, Water Supply, Sewerage, and Structural Engineering. Study and residence for not less than one year and a thesis on an approved subject are required. A year's work includes thirty (30) hours, of which not less than six (6) hours should be given to the thesis. A student who has received the degree Master of Science in Sanitary Engineering may become a candidate for the degree Doctor of Public Health.

The degree Civil Engineer (C.E.), Electrical Engineer (E.E.), or Mechanical Engineer (M.E.), is given for one year's academic work, and a thesis, after the candidate has had at least one year's responsible charge of engineering work. The year's work requires thirty (30) semester hours' credit, not less than twenty (20) hours of which must be in the same line as the candidate's undergraduate work, and the thesis which requires at least six (6) semester hours' credit, or a total of thirty-six (36) semester hours, required for the degree. One year of residence is required of all resident graduate students. The academic work for graduates of this Institution need not be done in residence. A non-resident candidate must be registered for at least two years before coming up for the degree of Engineer.

For further details of graduate work, see the Graduate School.

EQUIPMENT

BUILDINGS.

The College of Engineering occupies the Engineering Building and the Engineering Shops situated at the eastern end of the quadrangle. The buildings are well planned for engineering instruction and are devoted entirely to the technical work of the College.

ENGINEERING BUILDING—The basement contains the applied mechanics, timber testing, hydraulics, road materials testing, and cement laboratories.

ENGINEERING SHOPS—The Shops Building consists of a one-story section containing a foundry, a forge shop, and a machine shop, and a two-story section containing a wood-bench shop and a wood-turning shop on the first floor, and a freshman drawing room on the second floor. The mechanical engineering laboratory and the oil testing laboratory occupy a section of the building forty by ninety feet. The one-story section is lighted by means of a modified saw-tooth roof.

CIVIL ENGINEERING EQUIPMENT.

The Department of Civil Engineering possesses an extensive equipment of surveying instruments of the various standard makes, consisting of engineer's transits, solar attachments, mining transits, compasses, engineer's levels, solar compasses, plane tables, a sextant, barometers, chains and tapes, as well as smaller instruments.

The department has two bridge extensometers, manufactured by the Wissler Instruments Works, together with other necessary equipment for the determination of stresses in bridge trusses due to static and moving loads.

Standard apparatus for determining color, turbidity, and other physical properties of water, has been added to the facilities for instruction in sanitary engineering.

The department also possesses an ample collection of drawings, blue prints, and photographs for use in design.

Cement Laboratory.

The Cement Laboratory is equipped with a 2,000-pound Fairbanks shot machine, a 2,000-pound Riehle cement machine, briquette molds, tanks, Gilmore needles, vicat apparatus, sieves, hot water tanks, specific gravity apparatus, slate slabs, sample barrels of cement, and other necessary apparatus.

Hydraulics Laboratory.

The equipment of the Hydraulics Laboratory consists of tanks supplied with various shaped notches and orifices for discharge instruments, pipes arranged for determining resistance to flow in same, standard orifices and tubes. The laboratory also contains a Venturi meter, water meters, piezometers, current meters, an A Doble 12-inch experimental water wheel equipped for experimental work, three centrifugal pumps, Pitot's tubes, a hook gage, platform scales, hose, and various smaller pieces of hydraulic apparatus.

Laboratory of Applied Mechanics.

The laboratory of Applied Mechanics is equipped with a 30,000-pound Olsen testing machine; a 100,000-pound Olsen testing machine; a 200,000-pound Riehle testing machine that will test a 16-foot beam and an 8-foot column; extensometers; compressometers; a 50,000-in.-lb. Olsen torsion testing machine; a stone saw; and miscellaneous small tools and apparatus necessary for making commercial tests of iron, steel, brick, stone and wood. The laboratory is equipped with a brick rattler, and all other equipment necessary for making commercial tests of paving brick. The equipment of the cement laboratory is available for work in testing cements, mortars, and concrete.

The Laboratory also contains the following equipment especially designed for the work of the U. S. Government Timber Testing Station: a planer, a rip and crosseut saw, a drying oven, a three-point loader, a photographic dark room with full equipment, and miscellaneous tools.

Road Materials Testing Laboratory.

The equipment of the road materials testing laboratory consists of a Page impact machine for testing toughness of rock; a Page impact machine for cementation test; a two-cylinder abrasion machine, Deval type; a Dorry hardness machine; a grinding lap; drying oven; drill press; diamond stone saw; a ball mill, and other minor equipment for making commercial tests of road materials.

ELECTRICAL ENGINEERING LABORATORIES.

The Electrical Engineering Laboratories are well equipped for the study of direct and alternating current appliances, electrical testing, and the investigation of problems concerning the design, installation and operation of electrical apparatus.

Dynamo Laboratories.

The laboratories include in their equipment twelve complete motor-generator sets for testing purposes. These twelve sets range in capacity from one to fifty horse-power and include both direct current and alternating current motors and generators of various types and designs; some are direct connected, and some are belt connected. There are three double current generators that may be used as single-phase or three-phase synchronous converters, and also a regulating-pole synchronous converter with special features. In addition there is a large amount of miscellaneous equipment such as: a special convertible laboratory set; railway motors; Brush arc-lighting dynamos, etc. Switchboards with plugs and jacks, and arranged for trunking between different laboratories, are provided in each laboratory. Control devices and apparatus are provided for all equipment. Prony brakes and a cradle dynamometer are provided for individual tests. The University power plant is available for testing purposes and affords special opportunities for commercial and operation tests.

Transformer Laboratory.

The transformer equipment comprises four three-phase banks of transformers for various capacities; two sets of transformers for two- to three-phase transformation, or vice versa; an auto-transformer of special design, giving wide range of voltages; a twelve light constant current transformer; a Cooper-Hewitt mercury-arc rectifier; and other transformers for special purposes.

Photometry Laboratory.

The photometer room contains a Reichsanstalt photometer with a 250 centimeter scale, equipped with both Bunsen and Lummer Brodhun screens, a special integrating arc-light photometer, a 5-foot Ulbricht sphere, and a Macbeth illuminometer. The standards include an amylacetate (Hefner) lamp, and seasoned carbon and tungsten incandescent lamps certified by the United States Bureau of Standards. The necessary accessories for exact photometric work are included in the equipment.

Telephone Apparatus.

For the use of classes in telephony, there is a complete telephone laboratory equipment, consisting of a number of different types of subscribers' sets, together with the necessary central office apparatus and protective devices.

High Frequency and High Potential Equipment.

For the investigation of high tension and high frequency phenomena, the transformer laboratory is equipped with a 22,000 volt transformer, a 50,000 volt special testing transformer, a large condenser, and a number of Tesla coils of special construction.

In addition to the high frequency and high potential equipment described above, there is a three-unit oscillograph with a full complement of accessories for observing and photographing the actual wave shapes of alternating voltage, current, and flux. A one hundred and fifty mile adjustable artificial transmission line, equivalent to one phase of the Colorado Power Company's line is another piece of special apparatus in this laboratory.

Electrical Standardizing Laboratory.

The department has a very complete equipment for testing and calibrating all types of electrical measuring instruments for both alternating and direct currents.

Besides the standards, which are among the best obtainable, the equipment comprises a number of motor-generator sets from which may be obtained a wide range of voltages and currents, and all commercial frequencies and power factors.

Measuring Instruments.

The department possesses a large equipment of wattmeters, alternating and direct current ammeters and voltmeters of various ranges and representative makes.

A great variety of integrating wattmeters are used for experimental purposes, and synchronizers, water rheostats, two-lamp banks, a transformer bank and other accessories are provided for testing work.

Commercial Testing.

The University power plant affords the students an excellent opportunity for making commercial tests. The equipment consists of a 150-K.W. three-phase slow speed unit; a 75-K.W. three-phase direct connected alternator with belted exciter; a 35-K.W. direct current compound generator, direct connected; a 25-K.W. steam turbine exciter unit; a 35-K.W. motor generator set; and a thoroughly modern ten-panel switchboard.

MECHANICAL ENGINEERING LABORATORY.

The Mechanical Engineering Laboratory contains necessary apparatus for testing viscosity and other qualities of lubricating oils; calorimeters for determining dryness and heat of steam; injectors and water meters for measuring water for boiler trials; thermometers and pyrometers for measurement of temperatures; Bunte gas burettes and chemical reagents for tests of chimney flue gases; anemometers for study of heating and ventilation; calorimeters for the determination of the value of fuels; indicators, reducing motions and planimeters for indicator tests of engines; hydrometers for determinations of specific gravity of liquids; micrometers and extensometers for fine measurements; gauges and manometers for pressures; a Westinghouse Air Brake outfit; an hydraulic ram, engines, pumps, condensers, and a two-ton ice machine. The University power plant and heating system, consisting of three boilers of 600 horse-power capacity, a 225 horse-power Murry Corliss engine, a 125 horse-power Chuse engine, a Leyner air compressor, a 50 horse-power Harrisburg engine, several blowers and pumps furnish opportunities for efficiency tests of boilers with different fuels and of the engines at varying loads.

Workshop Equipment.

The forge equipment consists of the latest type of Buffalo down-draft forges, each with anvil, providing accommodations for twenty students at each session, and also accessory tools for forging, welding, and tool dressing.

The foundry contains a Newton cupola furnace, capable of melting two tons of iron per hour, ladles, flasks, and all necessary small tools, and a stock of patterns. The forges and cupola are served by three centrifugal fans, which are operated by a ten horse-power electrical motor.

The machine shop is equipped with iron workers' benches, planers, a milling machine, speed lathes, engine lathes, a shaper, grindstones, and other tools.

The wood shops occupy two rooms on the first floor, each shop has its own tool room, and is well equipped with benches and speed lathes for fitting and turning work. *

GENERAL ENGINEERING DRAWING.

The apparatus for instruction and practice consists of over one hundred models, two folding plane frames of special design, a pan-

tograph, a universal drafting machine, and numerous special drawing instruments. Besides the usual apparatus of frames, bath, and dark room for sun blue printing, the department has an electric blue printing machine.

ENGINEERING LIBRARY.

In addition to books on engineering and scientific subjects in the main University library there is an engineering library located in the Engineering Building. The engineering library contains files of bound volumes of proceedings and transactions of engineering societies, and of most of the best known engineering magazines in America and Europe. A trained librarian is in charge of the engineering library, which is operated as a branch of the main library of the University. The files of proceedings of societies and magazines are made more usable through a very complete set of indexes to engineering literature. The library also contains the standard encyclopedias and dictionaries, as well as numerous standard reference books.

LABORATORY FEES (FOR MATERIAL)*

(Per semester, collected only from students who take the particular courses.)

C.E. 1	Plane Surveying	\$3.00
C.E. 2	Higher Surveying	3.00
C.E. 3	Surveying	2.00
C.E. 4	Railroad Curves	1.00
C.E. 8	Applied Mechanics .....	.50
C.E. 9	Applied Mechanics Laboratory.....	2.00
C.E. 12	Hydraulics Laboratory	2.00
C.E. 17	Structural Details	1.00
C.E. 18	Bridge Details .....	.50
C.E. 20	Algebraic and Graphic Statics.....	1.00
C.E. 21	Bridge Analysis	1.00
C.E. 22	Bridge Design	2.50
C.E. 23	Architectural Construction	1.00
C.E. 24	Steel Mill Buildings	1.00
C.E. 25	Office Buildings	1.00

* See also under description of courses, page 150. For laboratory fees for courses in Chemistry, Physics, and Geology, see pages 33, 34, and for tuition and other fees see pages 33, 34.

C.E. 26	Structural Engineering	\$1.00
C.E. 27	Mine and Mill Structures.....	1.00
C.E. 28	Higher Structures	1.00
C.E. 31	Masonry Construction	1.00
C.E. 32	Reinforced Concrete Structures.....	.50
C.E. 33	Advanced Reinforced Concrete Design.....	1.00
C.E. 41	Highway Engineering	2.00
C.E. 42	Railroad Engineering	2.00
C.E. 47	Railway Structures	1.00
C.E. 59	Irrigation Structures	1.00
E.E. 14	Central Station Design.....	1.00
E.E. 21	Direct Current Laboratory.....	2.00
E.E. 22	Direct Current Laboratory.....	4.00
E.E. 23	Alternating Current Laboratory.....	4.00
E.E. 24	Alternating Current Laboratory.....	2.00
E.E. 25	E.E. Laboratory	2.00
E.E. 26	Photometry Laboratory	2.00
E.E. 27	Experimental Electrical Engineering.....	1.50
E.E. 31	Electrical Design	1.00
E.E. 32	Electrical Design	1.00
E.E. 42	Electric Railway Design.....	1.00
E.E. 43	Design of Electric Railway Equipment.....	1.00
M.E. 23	M.E. Laboratory	2.00
M.E. 24	Steam Engine Laboratory.....	4.00
M.E. 25	M.E. Laboratory	4.00
M.E. 31	Machine Drawing	1.00
M.E. 32	Machine Design	1.00
M.E. 33	Machine Design	1.00
M.E. 35	Machine Design	1.00
M.E. 36	Steam Engine and Boiler Design.....	1.50
M.E. 37	Locomotive Design	1.50
M.E. 38	Power Plant Design	1.00
M.E. 39	Locomotive Shop and Terminal Design.....	1.00
M.E. 40	Chemical Engineering Design.....	1.00
Shop 1	Woodworking	4.00
Shop 2	Forging	4.00
Shop 3	Pattern Making	2.00
Shop 4	Foundry	4.00
Shop 5	Machine Shop	6.00
Shop 6	Machine Shop and Foundry.....	4.00

Draw.1	Mechanical Drawing	\$2.00
Draw.2	Descriptive Geometry	2.00
Draw.3	Free-Hand Drawing	2.00
Draw.4	Engineering Drafting	2.00
Eng.Math.7	Geodesy and Least Squares.....	1.00
	Thesis (all departments).....	1.50

SUMMARY OF LABORATORY FEES.

Year	Semester	COURSE			
		Civil	Elect.	Mech.	Chem.
Freshman	First	\$4.00*	\$4.00*	\$4.00*	\$10.00
Freshman	Second	2.00*	2.00*	2.00*	10.00
Sophomore	First	8.00	12.00	12.00	21.00
Sophomore	Second	7.00	9.00	11.00	11.50
Junior	First	5.50	10.00	7.50	8.00
Junior	Second	6.50	7.50	7.00	10.50
Senior	First	4.50	10.00	6.50	10.00
Senior	Second	5.50	6.50	7.00	24.00
Total .....	.....	\$43.00	\$61.00	\$57.00	\$105.00

* For students registered in Chemistry the fees for each semester of the Freshman year are \$10.00.

ENGINEERING COURSES

CIVIL ENGINEERING

This course is especially arranged to meet the needs of the Irrigation, Highway, Structural, and Railway Engineer; and has majors in hydraulics, construction of dams, construction of roads and pavements, location of roads and railroads, location of reservoirs and canals, water power engineering, irrigation engineering, structural engineering, and railroad engineering. While the work is made practical by giving the student a large amount of practice in the field, the drafting and computing room, and the laboratory, the main object is the development of the mental faculties and judgment of the student.

The general studies and surveying of the first two years lead up to courses in theoretical and applied mechanics, railroads, roads and pavements, hydraulics, graphic statics and geodesy in the junior year, followed in the senior year by courses in bridge design, office building design, design of mill buildings and bins, water supply, sewerage, masonry construction, reinforced concrete construction, irrigation engineering, and railroad engineering.

Besides instruction in strictly engineering subjects, courses are given in economics, rhetoric, geology, bacteriology, astronomy, and the law of contracts.

Numerous inspection trips are made during the junior and senior years, to give the students an opportunity to get in touch with the practical side of engineering work.

ELECTRICAL ENGINEERING

It is the aim of the Department of Electrical Engineering to provide thorough theoretical and practical training for those desirous of engaging in the various applications of electricity.

Electrical engineering work proper begins in the junior year with courses in electricity and magnetism, theory and method of electrical measurements with direct applications to the theory, design and operation of continuous current apparatus. The theoretical work in alternating currents is begun in the second semester of this year.

The senior year is largely devoted to a study of the design and operation of alternating current apparatus, such as generators, transformers, synchronous and induction motors, rotary converters and transformers; distribution and transmission, electric traction and power plant construction and operation, lighting and metering; the telephone and telegraph; and other applications of electricity to the arts. The design of apparatus is studied by lectures and solution of problems in the drawing room.

Particular attention is given throughout to the proper correlation of classroom study to laboratory work; to this end courses are given in the testing and handling of the various types of direct and alternating current machinery. In connection with the work in lighting and illumination, complete tests are made of the various types of electric lamps. Frequent inspection trips are made to the numerous large power plants in the vicinity, and every opportunity is taken to acquaint the student with the engineering problems of his profession.

MECHANICAL ENGINEERING

This course is intended to train students along the broad lines of Mechanical Engineering. In the second year the students are given practical instruction in elementary studies of the kinematics of machinery and of machine design.

In the junior and senior years the course includes the theory of machine design, valve-gear movements, applied mechanics of both building structures and moving machinery; thermodynamics, including the study of steam, gasoline, and refrigerator engines; the theory of direct current electricity, and practical instruction in designing specific machines and power plants; shop-work; thorough instruction in the electrical and mechanical laboratories, in efficiency tests of engines, boilers, motors, blowers, pumps, calorimeters, injectors, etc., as well as general tests of boiler feed waters, lubricating oils, cements, flue gases, steam, fuels, steel and iron. Students are also given instruction in conducting practical duty trials of power plants.

CHEMICAL ENGINEERING

The great development in the United States during the last decade, of chemical and metallurgical industries, such as the manufacture of alkalies, fertilizers, beet sugar, Portland cement, by-

products from coal and petroleum, acids from sulphide ores, plate glass, pottery, etc., where a combined knowledge of mechanical engineering and chemistry is needed for competent supervision, has suggested the inauguration of this course. The course in Chemical Engineering is designed to give a major in chemistry and to give fundamental training in engineering. Students taking this course pursue courses in chemistry, physics, mathematics, and mechanics for the first two years; in the junior and senior years they are given special instruction in designing chemical machinery and in chemical analysis of fuels, gases, steel and iron, electrometallurgy, etc.

REQUIREMENTS FOR DEGREE BACHELOR OF SCIENCE IN ENGINEERING

CIVIL ENGINEERING

FRESHMAN YEAR*

FIRST SEMESTER

Algebra	(Eng. Math. 1)†	3
Trigonometry	(Eng. Math. 2)	2
History or Economics†		3
Engineering Drafting	(Draw. 4)‡	2
Rhetoric	(English 1)	3
Drawing	(Draw. 1)	3
Military Training		

16

SECOND SEMESTER

Analytic Geometry	(Eng. Math. 3)	5
History or Economics†		3
Rhetoric	(English 2)	3
Engineering Literature	(English 3)‡	2
Descriptive Geometry	(Draw. 2)	3
Military Training		

16

SOPHOMORE YEAR

FIRST SEMESTER

Calculus	(Eng. Math. 4)	5
Physics	(Phys. 1 and 3)	5
Railroad Curves	(C. E. 4)	2
Plane Surveying	(C. E. 1)	4
Timber Structures	(C. E. 16)	1
Military Training		

17

SECOND SEMESTER

Calculus	(Eng. Math. 5)	3
Physics	(Phys. 2 and 4)	5
Technical Mechanics	(C. E. 6)	2
Higher Surveying	(C. E. 2)	4
Engineering Materials	(C. E. 14)	2
Roads and Pavements	(C. E. 40)	1
Military Training		

17

JUNIOR YEAR

FIRST SEMESTER

Technical Mechanics	(C. E. 7)	3
Applied Mechanics	(C. E. 8)	3
Applied Mechanics Laboratory	(C. E. 9)	1
Geology	(Geol. 3)	3
Railroads	(C. E. 42)	4
Structural Details	(C. E. 17)	2
Technical Writing	(English 4)	2

18

SECOND SEMESTER

Hydraulics	(C. E. 11)	2
Hydraulics Laboratory	(C. E. 12)	1
Geodesy	(Eng. Math. 7), or	
Geology	(Geol. 4)	3
Steam Engines and Boilers	(M. E. 6)	2
Algebraic and Graphic Statics	(C. E. 20)	3
Bridge Details	(C. E. 18)	1
Option 1		2
Option 2		2
Bacteriology	(C. E. 50)	2

18

* All freshman students are required to attend technical lectures given each second week during the year.

† These references are to the description of courses in the College of Liberal Arts or to the description of courses in the College of Engineering.

‡ All Freshmen students not offering one unit of chemistry for entrance are required to register in Inorganic Chemistry Lectures and Laboratory (Chem. 1 and 2) for both semesters instead of History or Economics, Engineering Drafting, and Engineering Literature.

SENIOR YEAR

FIRST SEMESTER			SECOND SEMESTER		
Bridge Analysis	(C. E. 21)	3	Bridge Design	(C. E. 22)	3
Steel Mill Buildings	(C. E. 24)	3	Higher Structures	(C. E. 28)	4
Water Supply	(C. E. 51)	3	Engineering Contracts and Specifications	(C. E. 60)	2
Reinforced Concrete Structures	(C. E. 32)	2	Option 4		2
Masonry Construction	(C. E. 31)	5	Sewerage	(C. E. 52)	2
Option 3		2	C. E. Seminar	(C. E. 61)	1
			Thesis* or Option 5		2
<hr/>			<hr/>		
18			16		

OPTIONS IN CIVIL ENGINEERING COURSE

Civil engineering students in the junior year shall elect to take the courses in one of the three groups of options. These options are grouped under the head of Structural Engineering, of Railway Civil Engineering, and of Irrigation and Highway Engineering. No grouping of options other than as given will be permitted.

STRUCTURAL ENGINEERING

1. Architectural Construction (C. E. 23) 2
2. Heating and Ventilation (M. E. 10) 2
3. Office Buildings (C. E. 25) 2
4. Mine and Mill Structures (C. E. 27) 2
5. Advanced Reinforced Concrete Design (C. E. 33) 2

RAILWAY CIVIL ENGINEERING

1. Railway Maintenance (C. E. 44) 2
2. Railway Terminals (C. E. 43) 2
3. Railway Operation (C. E. 45) 2
4. Modern Railway Problems (C. E. 46) 2
5. Railway Structures (C. E. 47) 2

IRRIGATION AND HIGHWAY ENGINEERING

1. Canal and Reservoir Location (C. E. 56) 2
2. Highway Engineering (C. E. 41) 2
3. Water Power Engineering (C. E. 57) 2
4. Irrigation Engineering (C. E. 58) 2
5. Irrigation Structures (C. E. 59) 2

*Only exceptional students are permitted to elect thesis.

ELECTRICAL ENGINEERING

FRESHMAN YEAR*

FIRST SEMESTER

Algebra	(Eng. Math. 1)	3
Trigonometry	(Eng. Math. 2)	2
History or Economics †		3
Engineering Drafting	(Draw. 4) †	2
Rhetoric	(English 1)	3
Drawing	(Draw. 1)	3
Military Training		

16

SECOND SEMESTER

Analytic Geometry	(Eng. Math. 3)	5
History or Economics †		3
Rhetoric	(English 2)	3
Engineering Literature	(English 3) †	2
Descriptive Geometry	(Draw. 2)	3
Military Training		

16

SOPHOMORE YEAR

FIRST SEMESTER

Calculus	(Eng. Math. 4)	5
Physics	(Phys. 1 and 3)	5
Forging	(Shop 2)	2
Wood Shop	(Shop 1)	2
Kinematics	(M. E. 1)	2
Electric and Magnetic Circuits	(E. E. 7)	1
Military Training		

17

SECOND SEMESTER

Calculus	(Eng. Math. 5)	3
Physics	(Phys. 2 and 4)	5
Machine Shop and Foundry	(Shop 6)	2
Machine Drawing	(M. E. 31)	3
Engineering Materials	(E. E. 16)	2
Theoretical Mechanics	(Phys. 5)	2
Military Training		

17

JUNIOR YEAR

FIRST SEMESTER

Theoretical Mechanics	(Phys. 6)	3
Steam Engines and Boilers	(M. E. 6)	2
Direct Current Machines	(E. E. 1)	3
Illumination and Photometry	(E. E. 8)	2
Theory of Electricity and Magnetism	(Phys. 8)	3
Electrical Measurements	(Phys. 9)	2
M. E. Laboratory	(M. E. 23)	1
Direct Current Laboratory	(E. E. 21)	1
Photometry Laboratory	(E. E. 26)	1

18

SECOND SEMESTER

Applied Mechanics	(C. E. 8)	3
Applied Mechanics Laboratory	(C. E. 9)	1
Thermodynamics	(M. E. 7)	3
Organization and Management	(E. E. 17)	2
Alternating Current Machines	(E. E. 2)	3
Direct Current Laboratory	(E. E. 22)	2
Technical Writing	(English 4)	2
Machine Design	(M. E. 35)	2

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* All freshman students are required to attend technical lectures given each second week during the year.

† All Freshmen students not offering one unit of chemistry for entrance are required to register in Inorganic Chemistry Lectures and Laboratory (Chem. 1 and 2) for both semesters instead of History, or Economics, Engineering Drafting, and Engineering Literature.

SENIOR YEAR

FIRST SEMESTER			SECOND SEMESTER		
Theory of Alternating Currents	(E. E. 3)	4	Theory of Alternating Currents	(E. E. 4)	2
Alternating Current Laboratory	(E. E. 23)	2	Alternating Current Laboratory	(E. E. 24)	1
Hydraulics	(C. E. 11)	2	Engineering Contracts and Specifications	(C. E. 60)	2
Steam Engine Laboratory	(M. E. 24)	2	E. E. Seminar	(E. E. 12)	1
Structural Engineering	(C. E. 26)	2	Surveying	(C. E. 3)	2
Transmission and Distribution	(E. E. 6)	2	Option 3		3
Option 1		2	Option 4		2
Option 2		2	Thesis* or Option 5		3
		<hr/> 18			<hr/> 16

OPTIONS IN ELECTRICAL ENGINEERING COURSE

Electrical engineering students in the senior year shall elect to take the courses in one of the two groups of options. These options are grouped under the head of Power and Lighting Engineering and of Railway Electrical Engineering. No grouping of options other than as given will be permitted.

POWER AND LIGHTING ENGINEERING.

1. Electric Traction (E. E. 44) 2
2. Electrical Design (E. E. 31) 2
3. Central Station Design (E. E. 14) 3
4. Telephone Engineering (E. E. 5) 2
5. Experimental Electrical Engineering (E. E. 27) 3

RAILWAY ELECTRICAL ENGINEERING

1. Electric Railway Engineering (E. E. 40) 2
2. Design of Electric Railway Equipment (E. E. 43) 2
3. Electrical Railway Design (E. E. 42) 3
4. Electric Railway Engineering (E. E. 41) 2
5. Experimental Electrical Engineering (E. E. 27) 3

*Only exceptional students are permitted to elect thesis.

MECHANICAL ENGINEERING

FRESHMAN YEAR*

FIRST SEMESTER		SECOND SEMESTER	
Algebra	(Eng. Math. 1) 3	Analytic Geometry	(Eng. Math. 3) 5
Trigonometry	(Eng. Math. 2) 2	History or Economics†	3
History or Economics†	3	Rhetoric	(English 2) 3
Engineering Drafting	(Draw. 4)† 2	Engineering Literature	(English 3)† 2
Rhetoric	(English 1) 3	Descriptive Geometry	(Draw. 2) 3
Drawing	(Draw. 1) 3	Military Training	
Military Training			
	<hr/> 16		<hr/> 16

SOPHOMORE YEAR

FIRST SEMESTER		SECOND SEMESTER	
Calculus	(Eng. Math. 4) 5	Calculus	(Eng. Math. 5) 3
Physics	(Phys. 1 and 3) 5	Physics	(Phys. 2 and 4) 5
Wood Shop	(Shop 1) 2	Foundry	(Shop 4) 2
Forging	(Shop 2) 2	Pattern Making	(Shop 3) 1
Kinematics	(M. E. 1) 2	Technical Mechanics	(C. E. 6) 2
Engineering Materials	(M. E. 2) 1	Engineering Materials	(M. E. 3) 1
Military Training		Machine Drawing	(M. E. 31) 3
	<hr/> 17	Military Training	
			<hr/> 17

JUNIOR YEAR

FIRST SEMESTER		SECOND SEMESTER	
Technical Mechanics	(C. E. 7) 3	Hydraulics	(C. E. 11) 2
Applied Mechanics	(C. E. 8) 3	Applied Mechanics Laboratory	(C. E. 9) 1
Steam Engines and Boilers	(M. E. 4) 3	Thermodynamics	(M. E. 8) 2
Electrical Machinery	(E. E. 9) 2	Electrical Machinery	(E. E. 10) 3
Machine Design	(M. E. 32) 3	E. E. Laboratory	(E. E. 25) 1
Machine Shop	(Shop 5) 3	Technical Writing	(English 4) 2
Valve Gears	(M. E. 15) 1	Machine Design	(M. E. 33) 2
		Mechanics of Machinery	(M. E. 34) 2
		M. E. Laboratory	(M. E. 23) 1
		Option 1	2
	<hr/> 18		<hr/> 18

* All freshman students are required to attend technical lectures given each second week during the year.

† All Freshmen students not offering one unit of chemistry for entrance are required to register in Inorganic Chemistry Lectures and Laboratory (Chem. 1 and 2) for both semesters instead of History, or Economics, Engineering Drafting, and Engineering Literature.

SENIOR YEAR

FIRST SEMESTER			SECOND SEMESTER		
Thermodynamics	(M. E. 9)	2	Steam Turbines	(M. E. 17)	2
Automobiles and Gas Engines	(M. E. 12)	2	Engineering Contracts and Specifications	(C. E. 60)	2
Steam Engine Laboratory	(M. E. 24)	2	M. E. Laboratory	(M. E. 25)	2
Hydraulic Machinery	(M. E. 13)	2	Compressed Air	(M. E. 18)	2
Aviation	(M. E. 16)	2	Surveying	(C. E. 3)	2
Works Management	(M. E. 14)	2	Option 3		2
Structural Engineering			Thesis* or Option 4		3
	(C. E. 26)	2	M. E. Seminar	(M. E. 21)	1
Option 2		4			
		<u>18</u>			<u>16</u>

OPTIONS IN MECHANICAL ENGINEERING

Mechanical engineering students in the junior year shall elect to take the courses in one of the two groups of options. These options are grouped under the head of General Mechanical Engineering and of Railway Mechanical Engineering. No grouping of options other than as given will be permitted.

GENERAL MECHANICAL ENGINEERING

1. Heating and Ventilation (M. E. 10) 2
2. Steam Engine and Boiler Design (M. E. 36) 4
3. Refrigerating Machinery (M. E. 19) 2
4. Power Plant Design (M. E. 38) 3

RAILWAY MECHANICAL ENGINEERING

1. Locomotives and Air Brakes (M. E. 11) 2
2. Locomotive Design (M. E. 37) 4
3. Railway Operation and Signals (M. E. 20) 2
4. Locomotive Shop and Terminal Design (M. E. 39) 3

*Only exceptional students are permitted to elect thesis.

CHEMICAL ENGINEERING

FRESHMAN YEAR*

FIRST SEMESTER		SECOND SEMESTER	
Algebra	(Eng. Math. 1) 3	Analytic Geometry	(Eng. Math. 3) 5
Trigonometry	(Eng. Math. 2) 2	Chemistry Lectures	(Chem. 1) 3
Chemistry Lectures	(Chem. 1) 3	Chemistry Laboratory	(Chem. 2) 2
Chemistry Laboratory	(Chem. 2) 2	Rhetoric	(English 2) 3
Rhetoric	(English 1) 3	Descriptive Geometry	(Draw. 2) 3
Drawing	(Draw. 1) 3	Military Training	
Military Training			
<hr/> 16		<hr/> 16	

SOPHOMORE YEAR

FIRST SEMESTER		SECOND SEMESTER	
Calculus	(Eng. Math. 4) 5	Calculus	(Eng. Math. 5) 3
Physics	(Phys. 1 and 3) 5	Physics	(Phys. 2 and 4) 5
Qualitative Analysis	(Chem. 3) 3	Quantitative Analysis	(Chem. 6) 3
Quantitative Analysis	(Chem. 5) 4	Technical Mechanics	(C. E. 6) 2
Military Training		Engineering Materials	(M. E. 3a) 2
		Kinematics	(M. E. 1) 2
		Military Training	
<hr/> 17		<hr/> 17	

JUNIOR YEAR

FIRST SEMESTER		SECOND SEMESTER	
Technical Mechanics	(C. E. 7) 3	Applied Mechanics	(C. E. 8) 3
Steam Engines and Boilers	(M. E. 6) 2	Applied Mechanics Laboratory	(C. E. 9) 1
Physical Chemistry Lectures	(Chem. 17) 3	Thermodynamics	(M. E. 7) 3
Machine Drawing	(M. E. 31) 3	Machine Design	(M. E. 35) 2
Electrical Machinery	(E. E. 9) 2	Physical Chemistry Lectures	(Chem. 17) 3
Technical Writing	(English 4) 2	Electrical Machinery	(E. E. 10) 3
M. E. Laboratory	(M. E. 23) 1	E. E. Laboratory	(E. E. 25) 1
Ore Analysis	(Chem. 10) 2	Physical Chemistry Laboratory	(Chem. 18) 2
<hr/> 18		<hr/> 18	

SENIOR YEAR

FIRST SEMESTER		SECOND SEMESTER	
Hydraulics	(C. E. 11) 2	Economic Mineralogy	(Min. 2) 3
Steam Engine Laboratory	(M. E. 24) 2	Engineering Contracts and Specifications	(C. E. 60) 2
Structural Engineering	(C. E. 26) 2	Organic Preparations	(Chem. 14) 3
Economic Mineralogy	(Min. 1) 3	Industrial Chemistry	(Chem. 22) 3
Works Management	(M. E. 14) 2	Surveying	(C. E. 3) 2
Organic Chemistry Lectures	(Chem. 12) 4	Thesis† or Fire Assaying	(Min. 4.) 3
Chemical Engineering Design	(M. E. 40) 3		
<hr/> 18		<hr/> 16	

* All freshman students are required to attend technical lectures given each second week during the year.

† Only exceptional students are permitted to elect thesis.

DESCRIPTION OF COURSES

CIVIL ENGINEERING

DEAN KETCHUM, ASSISTANT PROFESSORS HUNTINGTON AND PHELPS, AND
MR. KNOETTGE, MR. MINER, MR. GREENE, AND MR. WHITNEY.

1. PLANE SURVEYING. Either semester. One hour lecture, nine hours in field. 4 h.

Instruction is given in the theory of surveying and in the theory, use and adjustment of the compass, level, transit, plane table and sextant. The field work includes pacing and chaining surveys; compass and transit traverses; measurement of angles by repetition; differential, profile, and contour leveling; traverses with the plane-table, etc. Maps and reports are required. Considerable time is given to a study of U. S. Land Survey methods, and to court decisions relating to relocation of corners, lines, and boundaries. Fee, \$3.00.

Textbook: Pence and Ketchum's Surveying Manual.

Prerequisite: Eng. Math. 1 and 2, and Draw. 1.

2. HIGHER SURVEYING. Second semester. One hour lecture, nine hours in field. 4 h.

In this course the different methods of making topographic surveys are discussed. A complete topographic survey based on a carefully designed triangulation system is made. The calculations are made and a map is drawn. Considerable time is devoted to topographic drawing. Fee, \$3.00.

Textbooks: Pence and Ketchum's Surveying Manual, Johnson and Smith's Theory and Practice of Surveying, and notes by the Department.

Prerequisite: C.E. 1.

3. SURVEYING. Second semester. Six hours in field. 2 h.

A brief course in surveying and in the theory and use of the level, transit, and other instruments, for electrical, mechanical, and chemical engineering students. The work covers prob-

lems in pacing, chaining, compass and transit surveys, profile and contour leveling, laying out buildings, etc. Fee, \$2.00.

Textbook: Pence and Ketchum's Surveying Manual.

Prerequisite: Eng. Math. 1, 2 and 3, Draw. 1, and Phys. 1 to 4.

4. RAILROAD CURVES. First semester. One hour lecture, three hours in field. 2 h.

A study is made of simple, compound, reversed, parabolic curves, and the transition spiral. Instruction consists of recitations, problems, and field locations. Fee, \$1.00.

Textbook: Allen's Railroad Curves and Earthwork.

Prerequisite: To be taken with C.E. 1.

6. TECHNICAL MECHANICS. Either semester. 2 h.

The mechanics of engineering rather than of astronomy and physics is here considered. Particular attention is given to developing and fixing fundamental concepts of equilibrium and motion as applied to engineering problems. Both algebraic and graphic methods of the calculation of problems are considered. This course is followed by C.E. 7.

Textbook: Maurer's Technical Mechanics.

Prerequisite: Eng. Math. 4 and Phys. 1, and to be taken with Eng. Math. 5.

7. TECHNICAL MECHANICS. Either semester. 3 h.

A continuation of C.E. 6.

Textbook: Maurer's Technical Mechanics.

Prerequisite: Eng. Math. 5 and C.E. 6.

8. APPLIED MECHANICS. Either semester. 3 h.

This course covers the elasticity of materials; stress and strain; working stresses; resistance of pipes and riveted joints; bending moment; resisting moment; shear; elastic curve of beams; torsion; internal stress; fatigue of metals; etc. Fee, \$0.50.

Textbook: Boyd's Strength of Materials.

Prerequisite: Eng. Math. 4 and 5, and Phys. 5 and 6, or C.E. 6 and to be taken with C.E. 7.

9. APPLIED MECHANICS LABORATORY. Either semester. Three hours in laboratory. 1 h.

Experiments on strength of steel, wrought and cast iron;

shear on rivets; strength of wood; and tensile and compressive strength of Portland cement, brick and building stone. Fee, \$2.00.

Prerequisite: To be taken with C.E. 8.

10. **ADVANCED APPLIED MECHANICS.** Second semester. 2 h. Elective.

This course covers an extended discussion of combined stresses, resilience, stresses in beams, deflection of beams, torsion, pipes and cylinders, curved bars, and arches.

Textbook: Morley's Strength of Materials.

Prerequisite: C.E. 8 and 20.

11. **HYDRAULICS.** Either semester. 2 h.

This course covers the weight and pressure of water; head; center of pressure, velocity and discharge through orifices, tubes, nozzles, pipes, hose, weirs, conduits, canals, rivers; meters and measurements; motors, turbines, and water wheels.

Textbook: Daugherty's Hydraulics.

Prerequisite: Eng. Math. 4 and 5, and Phys. 5 and 6, or C.E. 6 and 7.

12. **HYDRAULICS LABORATORY.** Second semester. Three hours in laboratory. 1 h.

Experiments on flow of water over weirs, through orifices, in open channels and pipes; tests of pumps; reaction and turbine water wheels, etc.; determination of coefficients of friction in hose and pipes. Fee, \$2.00.

Prerequisite: C.E. 7, and to be taken with C.E. 11.

13. **ADVANCED HYDRAULICS.** Second semester. 2 h. Elective.

An extended study of flow in pipes, nozzles, conduits, canals and rivers; of velocity and discharge; water hammer; dynamic action of streams; turbine and pump theory; hydraulic rams, lifts, hoists and meters.

Textbook: Gibson's Hydraulics and Its Application.

Prerequisite: C.E. 11.

14. **ENGINEERING MATERIALS.** Second semester. 2 h.

A study is made of the properties and requirements for materials used in engineering construction, the effect of differ-

ent methods of manufacture upon the quality of the material, and specifications and standard tests for materials.

Textbook: Moore's Materials of Engineering, and notes.

Prerequisite: Eng. Math. 3 and Phys. 1.

16. **TIMBER STRUCTURES.** First semester. 1 h.

A study of the joints and fastenings used in timber framing, and the details of timber structures.

Textbook: Jacoby's Structural Details.

Prerequisite: Draw. 1, Eng. Math. 1 and 2, and to be taken with Phys. 1 and 2.

17. **STRUCTURAL DETAILS.** First semester. Six hours in drawing room. 2 h.

Design and detail drawings of beams, columns, roof trusses and trestles of timber and of steel. Fee, \$1.00.

Textbooks: Ketchum's Structural Engineers' Handbook, and Jacoby's Structural Details.

Prerequisite: C.E. 6, and to be taken with C.E. 8.

18. **BRIDGE DETAILS.** Second semester. Three hours in drawing room. 1 h.

The estimation of weight and cost of a steel highway bridge, and the study of bridge details. Fee, \$0.50.

Textbook: Ketchum's Structural Engineers' Handbook.

Prerequisite: C.E. 8 and 17.

20. **ALGEBRAIC AND GRAPHIC STATICS.** Second semester. Two hours lecture, three hours in drawing room. 3 h.

The elements of statics by algebraic and graphic methods, and stresses in simple roof trusses and bridges. Fee, \$1.00.

Textbook: Ketchum's Design of Steel Mill Buildings.

Prerequisite: C.E. 6, 7 and 8.

21. **BRIDGE ANALYSIS.** First semester. One hour lecture, six hours in drawing room. 3 h.

This course includes the calculations of stresses in bridges and girders loaded with uniform and concentrated loads, by algebraic and graphic methods; stresses in portals, pins, and other details preliminary to bridge design. Each student calculates the stresses in, and investigates the efficiencies of, the members of a highway bridge. Fee, \$1.00.

Textbook: Ketchum's Design of Highway Bridges.

Prerequisite: C.E. 18 and 20.

22. **BRIDGE DESIGN.** Second semester. Nine hours in drawing room. 3 h.

The detailed design of a railway truss bridge and a railway plate girder bridge, including the making of complete detail drawings and an estimate of weight and cost. Fee, \$2.50.

Textbook: Ketchum's Structural Engineers' Handbook, and Johnson, Bryan and Turneure's Modern Framed Structures, Part III.

Prerequisite: C.E. 21.

23. **ARCHITECTURAL CONSTRUCTION.** Second semester. One hour lecture, three hours in drawing room. 2 h.

A study of the details of architectural construction, including working drawings, perspective, etc. Fee, \$1.00.

Prerequisite: C.E. 16 and 17.

24. **STEEL MILL BUILDINGS.** First semester. Two hours lecture, three hours in drawing room. 3 h.

A study of steel mill buildings, mine structures, grain elevators, ore bins, retaining walls, etc. Fee, \$1.00.

Textbooks: Ketchum's Design of Steel Mill Buildings, and Ketchum's Design of Walls, Bins, and Grain Elevators.

Prerequisite: C.E. 18 and 20, and to be taken with C.E. 21.

25. **OFFICE BUILDINGS.** First semester. One hour lecture, three hours in drawing room. 2 h.

The design and details of office buildings of steel and of reinforced concrete. Fee, \$1.00.

Prerequisite: C.E. 23 and to be taken with C.E. 21 and 24.

26. **STRUCTURAL ENGINEERING.** First semester. One hour lecture, three hours in drawing room. 2 h.

This course includes the elements of statics by algebraic and graphic methods, the calculation of stresses in roof trusses, and the design of shops and mill buildings. Fee, \$1.00.

Textbook: Ketchum's Design of Steel Mill Buildings.

Prerequisite: C.E. 8.

27. **MINE AND MILL STRUCTURES.** Second semester. One hour lecture, three hours in drawing room. 2 h.

A study of the design of head frames, coal tipples, coal

washers and breakers, concentrating plants, and other mine structures. Fee, \$1.00.

Textbook: Ketchum's Design of Mine Structures.

Prerequisite: C.E. 21, 24, and 32, and to be taken with C.E. 28.

28. HIGHER STRUCTURES. Second semester. Two hours lecture, six hours in drawing room. 4 h.

The calculation of stresses in swing bridges, suspension bridges, arch bridges, and cantilever bridges, office building frames, and other statically indeterminate structures. Fee, \$1.00.

Textbook: Johnson, Bryan and Turneaure's Framed Structures, Part II, and notes.

Prerequisite: C.E. 21 and 24, and to be taken with C. E. 22.

31. MASONRY CONSTRUCTION. First semester. Three hours lecture, six hours in drawing room. 5 h.

A study of cements, concrete, retaining walls, dams, arches, and other masonry and reinforced concrete structures. A complete investigation of a reinforced concrete arch is made, using the elastic theory. Considerable time is given to the design of structures. Fee, \$1.00.

Textbooks: Taylor and Thompson's Concrete, Plain and Reinforced; Baker's Masonry Construction, and Ketchum's Design of Walls, Bins and Grain Elevators.

Prerequisite: C.E. 8 and 20.

32. REINFORCED CONCRETE STRUCTURES. First semester. One hour lecture, three hours in drawing room. 2 h.

A study is made of the theory of reinforced concrete, and the design of reinforced concrete structures. Fee, \$0.50.

Textbook: Hool's Reinforced Concrete Construction, Vol. I.

Prerequisite: C.E. 20 and to be taken with C.E. 31.

33. ADVANCED REINFORCED CONCRETE DESIGN. Second semester. Six hours in drawing room. 2 h.

This course includes the preparation of designs and detailed drawings of reinforced concrete bridges and buildings. Fee, \$1.00.

Textbooks: Hool's Reinforced Concrete Construction, Vol. III, and Taylor and Thompson's Concrete, Plain and Reinforced.

40. **ROADS AND PAVEMENTS.** Second semester. 1 h.

A detailed study of country roads and city pavements, together with a study of road building materials.

Textbook: Blanchard's Elements of Highway Engineering.
Prerequisite: To be taken with C.E. 1.

41. **HIGHWAY ENGINEERING.** Second semester. One hour lecture, three hours in laboratory. 2 h.

A detailed study of road building materials, testing, surveys, the design of streets, the construction of modern pavements, road economics, etc. Fee, \$2.00.

Textbook: Blanchard and Drowne's Textbook on Highway Engineering, and notes by the Department.
Prerequisite: C.E. 40 and 42.

42. **RAILROAD ENGINEERING.** First semester. Two hours lecture, six hours in field and drawing room. 4 h.

Instruction in railroad engineering consists of field practice, office, and classroom work. Field practice consists of the complete location of a line of railroad. In the office the quantities are calculated, and profiles and a complete map are drawn. In the classroom a detailed study is made of the principles of economic location and construction, maintenance of way, and railway structures and appliances. Fee, \$2.00.

Textbooks: Allen's Railroad Curves and Earthwork, Webb's Economics of Railroad Construction, and references.
Prerequisite: C.E. 1, 2 and 4.

43. **RAILROAD TERMINALS AND BLOCK SIGNALS.** Second semester. 2 h

This course includes a study of the design of train yards, with special attention given to gravity layouts; methods of switching and of making up trains; special terminal arrangements for large cities, and terminal structures. Some time is also devoted to railway signaling.

Textbooks: Droege's Freight Terminals and Trains, and Latimer's Signaling.
Prerequisite: C.E. 42.

44. **RAILWAY MAINTENANCE.** Second semester. 2 h.

Rail and tie renewals, surfacing, manufacture of rails, rail failures, ballast, sidings, crossings, and track accessories, are

studied in detail. Some time is given to organization of maintenance forces.

Textbook: Willard's Maintenance of Way and Structures.

Prerequisite: C.E. 42.

45. RAILWAY OPERATION. First semester. 2 h.

Railway organization, conducting of traffic, train and car service, records and accounts constitute the basis for study in this course. Valuation of railroads is also given some attention.

Textbook: Byer's Railway Operation.

Prerequisite: C.E. 43 and 44.

46. MODERN RAILWAY PROBLEMS. Second semester. 2 h.

Special problems of location, operation and terminal facilities are studied in detail.

Textbook: Lauchli's Tunneling, and references and notes.

Prerequisite: C.E. 45.

47. RAILWAY STRUCTURES. Second semester. Six hours in drawing room. 2 h.

The design of yards, terminals, signal towers, water tanks, coaling stations, and other railway structures. Fee, \$1.00.

Prerequisite: C.E. 21, 24, 31, 32 and 44.

50. BACTERIOLOGY. Second semester. 2 h.

Lectures and laboratory demonstration.

This course covers a study of bacteriological methods and their application in water analysis and sewerage.

Textbook: Hiss and Zinsser's A Textbook of Bacteriology.

Prerequisite: Phys. 1 to 4.

51. WATER SUPPLY. First semester. 3 h.

This course covers the principal features of water works design and construction, including quantity and quality of potable water; choice of supply; the designing of distribution systems, reservoirs, dams, and elevated tanks.

Textbook: Turneure and Russell's Public Water Supplies.

Prerequisite: C.E. 11 and 50.

52. SEWERAGE. Second semester. 2 h.

This course covers the design and construction of sewerage systems, including separate and combined systems; surveys

and plans, determination of size and capacity; construction; and modern methods of sewage disposal.

Textbook: Metcalf and Eddy's American Sewerage Practice, Volume I, and references.

Prerequisite: C.E. 11 and 51.

56. CANAL AND RESERVOIR LOCATION. Second semester. One hour lecture, three hours in drawing room. 2 h.

A study is made of special methods of topographic surveys, economic location of canals, considering both cost of construction and of operation, limiting velocities, effects of curvature, diagrams and charts for facilitating this kind of work. Methods of estimating capacity and cost of reservoirs, selection of reservoir and dam sites as governed by geological formations. Drainage and reclamation of wet and irrigated lands. Some practice is given in actual canal location.

Textbooks: Hoyt and Grover's River Discharge, Etcheverry's Irrigation Engineering, Vol. II, and special articles and notes.

Prerequisite: C.E. 2, 4, and 42, and to be taken with C.E. 11.

57. WATER POWER ENGINEERING. First semester. 2 h.

Stream flow including hydrographs of actual streams; impulse wheels and reaction turbines and the conditions governing their selection; storage and the relation of the reservoir to the power station; economics of power development, its sale and distribution.

Textbook: Mead's Water Power Engineering.

Prerequisite: C.E. 7, 11, and 12, and to be taken with C.E. 31.

58. IRRIGATION ENGINEERING. Second semester. 2 h.

In this course a study is made of the fundamental principles of irrigation engineering, including the design and construction of reservoirs, dams, flumes, canals, and other irrigation works.

Textbook: Etcheverry's Irrigation Engineering, Vols. I and III.

Prerequisite: C.E. 11, 31, and 51.

59. IRRIGATION STRUCTURES. Second semester. Six hours in drawing room. 2 h.

The design of drops, flumes, dams, and other irrigation structures. This course includes lectures, recitations, problems and designs. Fee, \$1.00.

Prerequisite: C.E. 21, 24, 31, 32, 57, and to be taken with C.E. 58.

60. ENGINEERING CONTRACTS AND SPECIFICATIONS. Second semester. 2 h. For senior students only.

The law of engineering contracts and specifications. Emphasis is placed on the importance of the clear and definite writing of contracts and specifications, and considerable practice is given the student in the preparation of contracts and specifications.

Textbook: Tucker's Contracts in Engineering.

61. C.E. SEMINAR. Second semester. 1 h. For senior students only.

A study is made of technical periodicals and literature.

ELECTRICAL ENGINEERING

PROFESSOR EVANS, ASSISTANT PROFESSORS JENKINS AND DWIGHT, AND
MR. McCORMICK AND MR. SCHLOSS:—

1. DIRECT CURRENT MACHINES. First semester. 3 h.

A study of the electric and magnetic circuits of direct current machines and apparatus, with especial emphasis on the mathematical and graphical development of the principles involved in their theory and operation. The work is supplemented by practical problems throughout the course.

Textbook: Franklin and Esty's Elements of Electrical Engineering, Vol. I.

Prerequisite: Phys. 1 to 4, and 5, and to be taken with Phys. 6 and 8.

2. ALTERNATING CURRENT MACHINES. Second semester. 3 h.

A course in the study of simple alternating current circuits and the operation characteristics of alternating current machinery. Methods of measurement of alternating current are also taken up.

Textbook: Franklin and Esty's Elements of Electrical Engineering, Vol. II.

Prerequisite: E.E. 1 and 21, Phys. 6 and 8, and to be taken with E.E. 22.

3. THEORY OF ALTERNATING CURRENTS. First semester. 4 h.

A study of the theory, regulation, and operation of the various types of alternating current apparatus—single-phase and polyphase generators, synchronous and induction motors, rotary converters, transformers, etc.; the solution of alternating current circuits; the use of vectors and the complex quantity.

Textbook: Lawrence's Principles of Alternating Current Machinery.

Prerequisite: E.E. 2.

4. THEORY OF ALTERNATING CURRENTS. Second semester. 2 h.

A continuation of E.E. 3.

Prerequisite: E.E. 3.

5. TELEPHONE ENGINEERING. Second semester. 2 h.

A study of the electrical principles underlying the transmission of speech, the construction and operation of different types of subscribers' station and central office equipment, underground and aerial lines, automatic and wireless systems, telephone and telegraph engineering problems.

Textbook: McMeen and Miller's Telephony, notes and references.

Prerequisite: E.E. 1 and 21, and to be taken with E.E. 4.

6. TRANSMISSION AND DISTRIBUTION. First semester. 2 h.

A study of the principles of direct and alternating current distribution for light and power purposes, methods of installation and regulation, illustrated by practical application to specific problems, alternating current problems in long distance transmission.

Textbook: Dwight's Transmission Line Formulas and Lundquist's Transmission Line Construction, notes and references.

Prerequisite: E.E. 2, and to be taken with E.E. 3.

7. ELECTRIC AND MAGNETIC CIRCUITS. First semester. 1 h.

This course is a very elementary course offered to beginning students to introduce fundamental laws and principles as

early as possible. It is largely a problem course familiarizing the student with the laws and principles by drill in concrete examples.

Prerequisite: To be taken with Eng. Math. 4 and Phys. 1 and 3.

8. ILLUMINATION AND PHOTOMETRY. First semester. 2 h.

A study of illuminants with respect to their adaptation to interior and exterior lighting and methods of determining the amount, character, and distribution of their light flux, together with the engineering and economic principles of illumination.

Textbook: Wickenden's Illumination and Photometry, notes and references.

Prerequisite: To be taken with E.E. 1 or 9.

9. ELECTRICAL MACHINERY. First semester. 2 h.

A course, arranged for students who are not specializing in electrical engineering, covering the laws and properties of electric and magnetic circuits; the theory, construction, and operation of direct current machines and apparatus; the solution of practical problems.

Textbook: Gray's Principles and Practice of Electrical Engineering.

Prerequisite: Phys. 1 to 4, and to be taken with C.E. 7.

10. ELECTRICAL MACHINERY. Second semester. 3 h.

A continuation of Course 9, including also a study of the simpler principles of alternating currents and alternating current machinery.

Prerequisite: E.E. 9.

11. PRIMARY AND SECONDARY BATTERIES. 1 h. Elective.

A course devoted primarily to the study of storage batteries, their use, maintenance, and care, and their application to central station work and power distribution.

Prerequisite: E.E. 1 or 9.

12. E.E. SEMINAR. Second semester. 1 h. For senior students only.

A course in the history of electrical engineering and the biography of prominent engineers; also reviews of current electrical literature.

14. CENTRAL STATION DESIGN. Second semester. One hour lecture, six hours in drawing room. 3 h.

A course treating of the location and design of electric power plants and substations for public service. Complete drawings and details of cost and construction required. Fee, \$1.00.

Notes and references.

Prerequisite: E.E. 3 and M.E. 35.

16. ENGINEERING MATERIALS. Second semester. 2 h.

A study is made of the properties of materials used in engineering construction, the effects of different methods of manufacture upon the quality of material, and specifications and standard tests for materials.

Textbook: Moore's Materials of Engineering and notes.

Prerequisite: Eng. Math. 3 and Phys. 1.

17. ORGANIZATION AND MANAGEMENT. Second semester. 2 h.

Lectures and assigned reading.

A course dealing with engineering as a business problem, showing the importance of the dollar as a factor in engineering decisions. Fundamental principles studied as to costs, handling of labor and materials, producing a working organization and the engineer in the appraisal of public utilities for rate making, taxation, issue of securities and sale.

Prerequisite: E.E. 1 and to be taken with E.E. 2.

18. WAVE ANALYSIS. Second semester. 3 h. Elective.

This is an advanced course in the analysis of the complex waves that appear in alternating current circuits. It begins with a mathematical treatment of waves met in actual practice and leads to a mathematical study of simple transient phenomena. This mathematical treatment of waves and transient phenomena is supplemented by work in the laboratory with the oscillograph.

Prerequisite: Eng. Math. 6, and E.E. 3 and 23.

21. DIRECT CURRENT LABORATORY. First semester. Three hours in laboratory. 1 h.

Experimental study of the characteristics of direct current generators and motors, methods of testing, commercial tests, etc. Fee, \$2.00.

Textbook: Wilson's Dynamo Laboratory Outlines, notes and references.

Prerequisite: Phys. 3, 4, and 5, and to be taken with E.E. 1 and Phys. 6 and 8.

22. DIRECT CURRENT LABORATORY. Second semester. Six hours in laboratory. 2 h.

Continuation of Course 21. Fee, \$4.00.

Prerequisite: E.E. 21 and to be taken with E.E. 2.

23. ALTERNATING CURRENT LABORATORY. First semester. Six hours in laboratory. 2 h.

Experimental study of the properties and performance of alternating current generators, motors, transformers, rotary converters, methods of alternating current measurements and commercial tests, including complete operation tests. Fee, \$4.00.

Textbook: Wilson's Dynamo Laboratory Outlines, notes and references.

Prerequisite: To be taken with E.E. 3.

24. ALTERNATING CURRENT LABORATORY. Second semester. Three hours in laboratory. 1 h.

Continuation of Course 23 with some high tension tests and transmission experiments. Fee, \$2.00.

Prerequisite: E.E. 3, 6, and 23, and to be taken with E.E. 4.

25. E.E. LABORATORY. Second semester. Three hours in laboratory. 1 h.

A laboratory course in the testing and operation of direct and alternating current machinery, arranged for students not specializing in electrical engineering. Fee, \$2.00.

Textbook: Wilson's Dynamo Laboratory Outlines, notes and references.

Prerequisite: E.E. 9, and to be taken with E.E. 10.

26. PHOTOMETRY LABORATORY. First semester. Three hours in laboratory. 1 h.

A laboratory course in the determination of the strength and distribution of light of various types of illuminants, practice in the use of different photometers, measurement and representation of illumination. Fee, \$2.00.

Prerequisite: E.E. 8.

27. **EXPERIMENTAL ELECTRICAL ENGINEERING.** Second semester. One hour lecture and assigned reading, six hours in laboratory. 3 h.

Special tests in line with current electrical engineering problems such as insulation tests and high tension phenomena. Some time is also given to the work of the Standardization Laboratory and such special pieces of apparatus as the oscillograph and the artificial transmission line. Original effort on the part of the student is encouraged in the preparation of problems, manner of handling experiments, and in the interpretation of results. Fee, \$1.50.

Prerequisite: E.E. 3 and to be taken with E.E. 4.

31. **ELECTRICAL DESIGN.** First semester. Six hours in drawing room. 2 h.

Lectures, problems, drawing.

Principles of design of direct and alternating current apparatus. Fee, \$1.00.

Textbook: Still's Principles of Electrical Design, notes and references.

Prerequisite: E.E. 1 and 2, and to be taken with E.E. 3.

32. **ELECTRICAL DESIGN.** Second semester. Six hours in drawing room. 2 h. Elective.

Continuation of Course 31. Fee, \$1.00.

Prerequisite: E.E. 3, and to be taken with E.E. 4.

35. **TELEPHONE ENGINEERING.** (ADVANCED.) 2 h. Elective.

A course covering the various types of telephone lines and switchboards, methods of testing lines and cables, traffic problems, economics of telephone engineering.

Prerequisite: E.E. 5.

38. **ILLUMINATION AND PHOTOMETRY.** (ADVANCED.) 2 h. Elective.

The calculation of light flux and illumination. The design and comparison of illuminating systems. Practical tests of existing installations.

Prerequisite: E.E. 8.

40. **ELECTRIC RAILWAY ENGINEERING.** First semester. 2 h.

A detailed study of the principles of design and installation of electric railway systems, storage battery installations, distri-

bution systems; surface, overhead and underground railways. Principles and operation of various systems of train control, manual and automatic block signals and interlocking systems. Both direct and alternating current systems are covered. Some time is also given to the electrification of railroad terminals.

Prerequisite: E.E. 1 and 2, and to be taken with E.E. 3.

41. **ELECTRIC RAILWAY ENGINEERING.** Second semester. 2 h.

Continuation of E.E. 40.

Prerequisite: E.E. 40.

42. **ELECTRIC RAILWAY DESIGN.** Second semester. One hour lecture, six hours in drawing room. 3 h.

The design and location of electric power plants and substations for railway service. Complete drawings and details of cost and construction required. Fee, \$1.00.

Prerequisite: E.E. 40 and M.E. 35.

43. **DESIGN OF ELECTRIC RAILWAY EQUIPMENT.** First semester. Six hours in drawing room. 2 h.

Lectures, problems, drawing.

This course covers the principles of design of the various types of electric railway motors and control apparatus for direct and alternating current systems. Fee, \$1.00.

Textbook: Still's Principles of Electrical Design, notes and references.

Prerequisite: E.E. 1 and 2, and to be taken with E.E. 3.

44. **ELECTRIC TRACTION.** First semester. 2 h.

A preliminary survey of the principles of design and installation of electric railway systems, principles and operation of the various systems of train control, manual and automatic block signals. Direct and alternating current systems are covered.

Textbook: Harding's Electric Railway Engineering.

Prerequisite: E.E. 1 and 2, and to be taken with E.E. 3.

45. **RAILWAY SIGNALING.** 2 h. Elective.

A course covering the development and present-day practice in signaling, dispatching, and interlocking with some special applications.

Prerequisite: E.E. 40 and 44.

MECHANICAL ENGINEERING

PROFESSORS HUNTER AND BLACK, ASSISTANT PROFESSOR BAUER, AND
MR. MALLORY, MR. BEATTIE, AND MR. BECKER.

1. KINEMATICS. Either semester. 2 h.

A study of the relative motions of machine parts, instant centers, straight line motions, cams, gearing, belting and intermittent motions.

Textbook: Keown's Mechanism.

Prerequisite: Eng. Math. 1 and 2, and to be taken with Phys. 1 and 3.

2. ENGINEERING MATERIALS. First semester. 1 h.

This course is a study of the manufacture, properties and selection of the materials used in engineering construction.

Textbook: Moore's Materials of Engineering and notes.

Prerequisite: Eng. Math. 1 and 2, and to be taken with Phys. 1 and 3.

3. ENGINEERING MATERIALS. Second semester. 1 h.

A continuation of M.E. 2.

Prerequisite: M.E. 2.

3a. ENGINEERING MATERIALS. Second semester. 1 h.

A combination of courses M.E. 2 and M.E. 3.

4. STEAM ENGINES AND BOILERS. First semester. 3 h.

In this course the various types of boilers and engines are studied as well as their construction and operation.

Textbook: Hutton's Mechanical Engineering of Steam Power Plants.

Prerequisite: Phys. 1 to 4.

6. STEAM ENGINES AND BOILERS. Either semester. 2 h.

A course for electrical, civil, and chemical engineering students, covering the design, construction, operation and maintenance of power plant machinery.

Textbook: Allen and Bursley's Heat Engines.

Prerequisite: Phys. 1 to 4.

7. THERMODYNAMICS. Second semester. 3 h.

A brief course in thermodynamics with special reference to the steam engine, the steam turbine and the gas engine.

Prerequisite: M.E. 6, Phys. 6 or C.E. 7.

8. THERMODYNAMICS. Second semester. 2 h.

A study of the mechanical theory of heat, laws of transformation, perfect gases, saturated and superheated vapors, various cycles, heat and refrigeration engines.

Textbook: Ennis' Applied Thermodynamics.

Prerequisite: Phys. 1 to 4, M.E. 4, and Phys. 6, or C.E. 7.

9. THERMODYNAMICS. First semester. 2 h.

A continuation of M.E. 8.

Prerequisite: M.E. 4 and 8.

10. HEATING AND VENTILATION. Second semester. 2 h.

Methods of heating and ventilating are investigated to determine their efficiency and economy. As a part of the course each student is required to design a system of heating for a given building by some standard method, to prepare the necessary specifications and contracts and to make out bills of material.

Textbook: Greene's Heating and Ventilating of Buildings.

Prerequisite: M.E. 1 and 4.

11. LOCOMOTIVES AND AIR BRAKES. Second semester. 2 h.

The mechanics of the locomotive and problems relating to its operation; the engine and valve mechanism, train resistance, rail pressure, slipping, braking, hauling capacity and steam consumption are each discussed with problems.

Textbooks: Henderson's Operations, and McShane's Locomotive, Up to Date.

Prerequisite: M.E. 4 and 32, and C.E. 7 and 8.

12. AUTOMOBILES AND GAS ENGINES. First semester. 2 h.

This course covers the construction and operation of automobiles, gas engines and producer gas plants.

Textbooks: Hobbs and Elliott's The Gasoline Automobile, and Streeter's Internal Combustion Engines.

Prerequisite: M.E. 8.

13. HYDRAULIC MACHINERY. First semester. 2 h.

This course covers the application of the principles of the dynamics of fluids to the various turbines and other water wheels.

Textbook: Blaine's Hydraulic Machinery.

Prerequisite: C.E. 11, and M.E. 4.

14. **WORKS MANAGEMENT.** First semester. 2 h.

This course covers the economical designs and management of manufacturing property, the capitalization and organization of companies, the organization of labor, the calculation of cost, transmission of power, and sanitation.

Textbook: Ennis' Works Management.

Prerequisite: M.E. 4 and 32.

15. **VALVE GEARS.** First semester. 1 h.

This course covers a theoretical and practical study of valve gears and link motions.

Textbook: Fessenden's Valve Gears.

Prerequisite: M.E. 4.

16. **PRINCIPLES OF AVIATION.** First semester. 2 h.

A study of the history, types and nomenclature of the aeroplane, with particular reference to air resistance, principles of flight, materials of construction, rigging of aeroplanes, propellers and engines.

Prerequisite: C.E. 7 and 8, M.E. 8, and to be taken with M.E. 12.

17. **STEAM TURBINES.** Second semester. 2 h.

A study of the design and operation of steam turbines covering the comparison of types, flow of steam and its action on turbine vanes, design of vanes for maximum efficiency, theory of single and multistage turbines, turbine performance, and condensing apparatus.

Textbook: Moyer's Steam Turbines.

Prerequisite: M.E. 8 and 9, or M.E. 6 and 7.

18. **COMPRESSED AIR.** Second semester. 2 h.

A study of air compressors, the transmission of compressed air and its application to pneumatic machinery.

Textbook: Peele's Compressed Air Plant.

Prerequisite: M.E. 8 and 9.

19. **REFRIGERATING MACHINERY.** Second semester. 2 h.

A study is made of cold storage, the manufacture of ice and of refrigerating machinery.

Textbook: MacIntire's Mechanical Refrigeration.

Prerequisite: M.E. 8 and 9.

20. RAILWAY OPERATION AND SIGNALS. Second semester. 2 h.

This course covers the operation of trains, handling of freight, and the construction, operation and maintenance of railway signals.

Prerequisite: M.E. 11 and 37.

21. M.E. SEMINAR. Second semester. 1 h. For senior students only.

A study is made of technical periodicals and literature.

23. M.E. LABORATORY. Either semester. Three hours in laboratory. 1 h.

Experimental work in calibration of planimeters, water meters and gages; tests of dryness and quality of steam; tests of acidity, specific gravity, chilling and flashing points, and viscosity of oils and other lubricating materials; of impurities in boiler feed water; of flow of air with anemometers and draught gages. Fee, \$2.00.

Textbook: Carpenter and Dietrich's Experimental Engineering is used as a reference.

Prerequisite: M.E. 4, or to be taken with M.E. 6.

24. STEAM ENGINE LABORATORY. First semester. Six hours in laboratory. 2 h.

Tests of boiler flue gases and combustion of fuels, and of efficiency of injectors, engines and boilers; commercial tests of heating and power plants. Fee, \$4.00.

Prerequisite: M.E. 7 or 8, and 23.

25. M.E. LABORATORY. Second semester. Six hours in laboratory. 2 h.

Advanced work in engine testing involving a study of entropy; tests in heating and ventilation. Fee, \$4.00.

Prerequisite: M.E. 9 and 24.

31. MACHINE DRAWING. Either semester. One hour lecture, six hours in drawing room. 3 h.

A study of machine elements, such as bolts, screws, keys, couplings and gears. Problems are given requiring simple calculations for strength, including sketching and working drawings. Fee, \$1.00.

Textbook: Benjamin and Hoffman's Machine Design, supplemented by notes.

Prerequisite: M.E. 1 and to be taken with M.E. 3 or E.E. 16.

32. MACHINE DESIGN. First semester. One hour lecture, six hours in drawing room. 3 h.

This course covers advanced problems in kinematics, the design of belting, shafting, bearings and pulleys, and the design of a toggle press, including a set of working drawings and a bill of material. Fee, \$1.00.

Textbook: Benjamin and Hoffman's Machine Design.

Prerequisite: M.E. 3 and 31, C.E. 6, and to be taken with C.E. 7 and 8.

33. MACHINE DESIGN. Second semester. Six hours in drawing room. 2 h.

A continuation of M.E. 32. Fee, \$1.00.

Prerequisite: M.E. 32, C.E. 8, and to be taken with M.E. 34.

34. MECHANICS OF MACHINERY. Second semester. 2 h.

This course covers the application of the principles of theoretical and applied mechanics to such problems in machine design, as transmission of power by belting, ropes and chains; dynamometers; air machinery including fans and blowers; friction in machine parts, and useful applications of friction to clutches and brakes.

Prerequisite: C.E. 8, M.E. 32, and to be taken with M.E. 33.

35. MACHINE DESIGN. Second semester. Six hours in drawing room. 2 h.

This course is similar to M.E. 32 and is arranged for students in electrical and chemical engineering. Fee, \$1.00.

Textbook: Benjamin and Hoffman's Machine Design.

Prerequisite: E.E. 16, M.E. 31, Phys. 5 and 6, or C.E. 6 and 7, and to be taken with C.E. 8.

36. STEAM ENGINE AND BOILER DESIGN. First semester. One hour lecture, nine hours in drawing room. 4 h.

This course covers the design of simple and compound steam engines, and of fire and water tube boilers. Fee, \$1.50.

Prerequisite: M.E. 8, 33, 34, and to be taken with M.E. 9.

37. LOCOMOTIVE DESIGN. First semester. One hour lecture, nine hours in drawing room. 4 h.

This course is similar to M. E. 36 but covers the design of compound locomotive engines and boilers. Fee, \$1.50.

Prerequisite: M.E. 8, 11, 33, 34, and to be taken with M.E. 9.

38. **POWER PLANT DESIGN.** Second semester. One hour lecture, six hours in drawing room. 3 h.

Each student is required to make a design, with estimates and specifications, of a steam-electric power plant to operate most economically on a given load curve. Fee, \$1.00.

Prerequisite: M.E. 9 and 36.

39. **LOCOMOTIVE SHOP AND TERMINAL DESIGN.** Second semester. One hour lecture, six hours in drawing room. 3 h.

This course covers the design and equipment of railway shops, round-houses and trackage for the same. Fee, \$1.00.

Prerequisite: M.E. 9, 11, and 37.

40. **CHEMICAL ENGINEERING DESIGN.** First semester. One hour lecture, six hours in drawing room. 3 h.

This course covers a study of the layout of chemical plants, and the mechanical analysis and design of special classes of machinery used in chemical processes. Fee, \$1.00.

Prerequisite: M.E. 7 and 35, and C.E. 8.

SHOP WORK

1. **WOODWORKING.** First semester. Six hours in shop. 2 h.

The use of all ordinary woodworking tools in a series of graded exercises, including the use of speed lathe and turning tools. Fee, \$4.00.

2. **FORGING.** First semester. Six hours in shop. 2 h.

Practical work in the forging and welding of iron and steel, tool dressing, tempering, case hardening and annealing. This course is designed to familiarize the student with the properties and structure of the different irons and steels. Fee, \$4.00.

3. **PATTERN MAKING.** Second semester. Three hours in shop. 1 h.

Making patterns for iron and brass castings with allowance for draft, shrinkage and finish. Fee, \$2.00.

Prerequisite: Shop 1.

4. **FOUNDRY.** Second semester. Six hours in shop. 2 h.

Practical work in the making of moulds and cores; the care and operation of the cupola furnace and the brass furnace; mixing of metals; and the study of the properties of alloys. Fee, \$4.00.

5. **MACHINE SHOP.** First semester. Nine hours in shop. 3 h.

Practical work in the machining of the different grades of iron, steel, bronze and other metals by means of the lathe, planer, milling machine and drill press. Repairs are made on broken machinery and new machines and machine parts are constructed. Fee, \$6.00.

Prerequisite: M.E. 1, 2, and 30.

6. **MACHINE SHOP AND FOUNDRY.** Second semester. Six hours in shop. 2 h.

This course is for electrical engineering students. The time is divided between machine shop and foundry. Fee, \$4.00.

Prerequisite: M.E. 1, and to be taken with E.E. 16.

GENERAL ENGINEERING DRAWING

ASSISTANT PROFESSOR ALLEN AND MR. MERRILL:—

1. **MECHANICAL DRAWING.** Either semester. Nine hours in drawing room. 3 h.

Use of instruments, drawing of geometric figures, principles of isometric, cabinet and orthographic projections, making of working drawings, tracing and blue printing. Considerable attention is given to lettering. Fee, \$2.00.

Textbooks: French's Engineering Drawing, and Reinhardt's Lettering.

2. **DESCRIPTIVE GEOMETRY.** Either semester. One hour lecture, six hours in drawing room. 3 h.

The course covers the orthographic projection of points, lines, planes, curved surfaces, etc., in the four angles of projection, development of surfaces. In order to fix the principles, many geometric problems are solved and also a considerable number of practical applications are worked out. Fee, \$2.00.

Textbook: Smith's Practical Descriptive Geometry.

Prerequisite: Draw. 1.

3. **FREE-HAND DRAWING.** First semester. Six hours in drawing room. 2 h. Open to students in all departments.

Principles of free-hand perspective, light and shade, practice drawing from models and casts, and assigned reading. Fee, \$2.00.

4. **ENGINEERING DRAFTING.** First semester. Six hours in drawing room. 2 h.

This course includes freehand lettering, machine sketching, perspective, and elementary structural drafting. Fee, \$2.00.

ENGINEERING MATHEMATICS

ASSISTANT PROFESSOR SPERRY, AND MR. FLACH, MR. MANN, AND
MR. MCGRATH:—

1. **ALGEBRA.** Either semester. 3 h.

A one-semester course covering index laws, algebraic reductions, linear equations, quadratic equations, the binomial theorem, complex numbers, theorems on roots in theory of equations, logarithms and exponential equations, partial fractions, theorems on limits. A number of graphs are required.

Textbook: Rietz and Crathorne's College Algebra.

2. **TRIGONOMETRY.** Either semester. 2 h.

A one-semester course covering the right triangle, functions of any angle, radian measure, multiple angles, sum and difference formulas, the oblique triangle, inverse functions and trigonometric equations, the right spherical triangle. A knowledge of logarithms is assumed. Graphs of the trigonometric functions are required.

Textbook: Rothrock's Plane and Spherical Trigonometry.

3. **ANALYTICAL GEOMETRY.** Either semester. 5 h.

A one-semester course covering the straight line and circle, transcendental equations, polar equations, transformation of coordinates, conic sections and tangents, parametric equations and loci, empirical equations, the plane and straight line in space, the sphere, cylinder, and quadric surfaces, space coordinates. Graphs and constructions drawn according to exact directions are required in plane analytics.

Textbook: Smith and Gale's New Analytic Geometry.

Prerequisite: Eng. Math. 1 and 2.

4. **CALCULUS.** Either semester. 5 h.

A one-semester course covering fundamental differentiation, applications of the derivative and differential, curvature, the total derivative and differential, Maclaurin's and Taylor's the-

orems and their application to series and approximate formulas, simple integration.

Textbook: Phillips' Differential and Integral Calculus.

Prerequisite: Eng. Math. 3.

5. CALCULUS. Either semester. 3 h.

A one-semester course in continuation of Eng. Math. 4, covering harder integration, applications of integration to areas, volumes, lengths of curves, centroids, moments of inertia, and to work, pressure, and discharge problems; double and triple integration.

Textbook: Phillips' Differential and Integral Calculus.

Prerequisite: Eng. Math. 4.

6. DIFFERENTIAL EQUATIONS. Second semester. 3 h.

A one-semester course with engineering and physical applications covering equations of the first order and first and higher degrees, trajectories, linear equations with constant coefficients, the homogenous linear equation, ordinary equations in more than two variables. Elementary hyperbolic functions are included.

Textbook: Murray's Differential Equations.

Prerequisite: Eng. Math. 4.

7. GEODESY AND LEAST SQUARES. Second semester. Two hours lecture, three hours in field. 3 h.

A course covering the motions of the heavenly bodies, the tides, solar and sidereal time in astronomy, triangulation, base line measurement, the figure of the earth, geodetic levelling, the determination of time, latitude, longitude, and azimuth; the theory of errors and its application to the adjustment of triangulation, base lines, and level circuits. Field observations for time, latitude, and azimuth on sun and stars form part of the work. Fee, \$1.00.

Textbooks: Young's Manual of Astronomy, and Ingram's Geodetic Surveying.

Prerequisite: Eng. Math. 5 and C.E. 2.

ENGINEERING ENGLISH

1. RHETORIC. Either semester. 3 h.

This is a course in composition arranged with special reference to engineering students.

2. RHETORIC. Either semester. 3 h.

This course is a continuation of Course 1.

3. ENGINEERING LITERATURE. Either semester. 2 h.

In this course the student reads and analyzes selections from the best writings in pure science and in engineering. The student is shown the value of clear, concise and accurate diction.

Supplementary Reading. In addition to the reading in this course the student is required to do a prescribed amount of reading during the sophomore and junior years. The list of required books is printed in a supplementary pamphlet.

4. TECHNICAL WRITING. Either semester. 2 h.

This is an advanced course in composition with particular reference to the needs of the individual student. Particular attention is given to the preparation of engineering reports and to technical journalism.

Prerequisite: English 1 and 2, and junior standing in the College of Engineering.

MILITARY TRAINING

For description of courses, see page 99.

GRADUATE SCHOOL

FACULTY*

- †LIVINGSTON FARRAND, A.M., M.D., LL.D., President of the University.
GEORGE NORLIN, A.B., 1893, Hastings College; Ph.D., 1899, Chicago.
Acting President of the University; Professor of Greek.
- J. RAYMOND BRACKETT, A.B., 1875, Bates; Ph.D., 1880, Yale. Dean;
Professor of Comparative and English Literature.
- IRA M. DELONG, A.B., 1878, A.M., 1881, Simpson College; LL.D., 1914,
University of Denver. Professor of Mathematics.
- FRED B. R. HELLEMS, A.B., 1893, Toronto; Ph.D., 1898, Chicago;
LL.D., 1913, Colorado College. Professor of Latin.
- CHARLES C. AYER, A.B., 1889, Harvard; Ph.D., 1896, Strasburg. Pro-
fessor of Romance Languages.
- FRANCIS RAMALEY, B.S., 1895, Ph.D., 1899, Minnesota. Professor of
Biology.
- ‡MELANCHTHON F. LIBBY, A.B., 1890, Toronto; Ph.D., 1900, Clark.
Professor of Philosophy.
- JOHN BERNARD EKELEY, A.B., 1891, A.M., 1893, Colgate; Ph.D., 1902,
University of Freiburg in Baden; Sc.D., 1911, Colgate. Profes-
sor of Chemistry.
- RUSSELL D. GEORGE, A.B., 1897, A.M., 1898, McMaster. Professor of
Geology.
- JOHN D. FLEMING, A.B., 1875, Central University; LL.B., 1879, Lou-
isville; LL.D., 1910, Central University. Charles Inglis Thom-
son Professor of Law.
- §MILO S. KETCHUM, B.S., 1895, C.E., 1900, Illinois. Professor of Civil
Engineering.
- EDWARD JACKSON, C.E., 1874, A.M., 1878, Union College; M.D., 1878,
Pennsylvania; Sc.D., 1914, Union College. Professor of Ophthal-
mology.
- HERBERT S. EVANS, B.S., 1898, E.E., 1900, Nebraska. Professor of
Electrical Engineering.

* This Faculty is made up of Professors and Instructors of the various
Faculties of the University who offer work in the Graduate School.

† On leave of absence, June, 1917, to September, 1918, for war service.

‡ On leave of absence, second semester, 1917-1918.

§ On leave of absence, second semester, 1917-1918, for war service.

- JOHN A. HUNTER, B.S., 1890, M.E., 1896, Pennsylvania State College. Professor of Mechanical Engineering.
- THEODORE D. A. COCKERELL, Sc.D., 1913, Colorado College. Professor of Zoology.
- GEORGE M. CHADWICK. Professor of Music.
- JAMES F. WILLARD, B.S., 1898, Ph.D., 1902, Pennsylvania. Professor of History.
- OLIVER C. LESTER, A.B., 1897, Central College, Missouri; A.M., 1902, Ph.D., 1904, Yale. Professor of Physics.
- FRANK E. THOMPSON, A.B., 1901, Leland Stanford. Professor of Education.
- RUSS C. WHITMAN, A.B., 1894, M.D., 1899, Michigan. Professor of Pathology.
- JUNIUS HENDERSON, A.B., 1908, Colorado. Professor of Natural History.
- JOHN S. McLUCAS, A.B., 1893, South Carolina College; A.B., 1895, A.M., 1899, Harvard. Professor of English.
- GRACE VAN SWERINGEN BAUR, B.L., 1893, Cornell; Ph.D., 1904, University of Berlin. Professor of Germanic Languages.
- ALVIN R. PEEBLES, M.D., 1906, Michigan. Professor of Preventive and Experimental Medicine.
- CLOUGH T. BURNETT, M.D., 1908, Michigan. Professor of Bacteriology.
- MILO G. DERHAM, A.B., 1892, Cornell; Ph.D., 1904, Colorado. Professor of Latin.
- LAWRENCE W. COLE, A.B., 1899, Oklahoma; A.M., 1904, Ph.D., 1910, Harvard. Professor of Psychology.
- JAMES C. TODD, Ph.B., 1897, Wooster; M.D., 1900, Pennsylvania. Professor of Clinical Pathology.
- MARION GILLASPIE, M.D., 1905, Colorado. Professor of Anatomy.
- OMER C. WASHBURN, Ph.C., 1902, B.S. (Phar.), 1904, Michigan. Professor of Pharmacy.
- ORAN D. OSBORN, A.B., 1892, Michigan; Ph.D., 1900, Chicago. Professor of Sociology.
- FREDERICK A. BUSHEE, B.L., 1894, Dartmouth; A.M., 1898, Ph.D., 1902, Harvard. Professor of Economics and Sociology.

* Died October 22, 1917.

† On leave of absence, February, 1918, to February, 1919, for war service.

‡ On leave of absence for war service.

RALPH D. CRAWFORD, A.B., 1905, A.M., 1907, Colorado; Ph.D., 1913, Yale. Professor of Mineralogy and Petrology.

*HARRY A. CURTIS, B.S. (Ch.E.), 1908, A.M., 1910, Colorado; Ph.D., 1914, Wisconsin. Professor of Physical Chemistry.

*FRED G. FOLSOM, A.B., 1895, Dartmouth; LL.B., 1899, Colorado. Professor of Law.

WILLIAM R. ARTHUR, A.B., 1899, Washburn; LL.B., 1908, Northwestern. Professor of Law.

CHARLES N. MEADER, A.B., 1906, Colby; M.D., 1910, Harvard. Professor of Medicine.

FRANK L. CLAPP, B.S., 1911, Lincoln College; A.M., 1912, Illinois; Ph.D., 1914, Wisconsin. Professor of School Administration.

ARNOLD J. LIEN, A.B., 1908, A.M., 1909, Minnesota; Ph.D., 1913, Columbia. Professor of Political Science.

ROBERT C. LEWIS, Ph.B., 1909, Ph.D., 1912, Yale. Professor of Physiology and Biochemistry.

HERBERT S. HADLEY, A.B., 1892, Kansas; LL.B., 1894, LL.D., 1909, Northwestern; LL.D., 1910, Missouri. Professor of Law.

WILLIAM BLACK, B.S. (M.E.), 1907, Illinois. Professor of Steam and Gas Engineering.

DAVID R. JENKINS, B.S. (E.E.), 1904, E.E., 1907, Colorado. Assistant Professor of Electrical Engineering.

S. ANTOINETTE BIGELOW, A.B., 1893, Wellesley; A.M., 1910, Columbia. Assistant Professor of English Literature.

WILLIAM A. COOK, A.B., 1902, A.M., 1911, Illinois; Ph.D., 1913, Wisconsin. Assistant Professor of Education.

WHITNEY C. HUNTINGTON, B.S. (C.E.), 1910, C.E., 1912, M.S., 1913, Colorado. Assistant Professor of Civil Engineering.

HOWARD E. PHELPS, B.S. (C.E.), 1907, C.E., 1916, Colorado. Assistant Professor of Civil Engineering.

MAX M. ELLIS, A.B., 1907, A.M., 1908, Ph.D., 1911, Indiana; Sc.D., 1914, Vincennes. Assistant Professor of Biology.

CARL C. ECKHARDT, Ph.B., 1902, Ohio State; A.M., 1904, Michigan; Ph.D., 1908, Cornell. Assistant Professor of History.

FRANK S. BAUER, B.S. (M.E.), 1911, Illinois; M.E., 1915, Colorado. Assistant Professor of Mechanical Engineering.

PHILIP G. WORCESTER, A.B., 1909, A.M., 1911, Colorado. Assistant Professor of Geology.

* On leave of absence for war service.

- WILLIAM F. BAUR, Ph.B., 1893, Michigan. Assistant Professor of Germanic Languages.
- FRANK G. ALLEN, B.S. (M.E.), 1901, Illinois. Assistant Professor of Engineering Drawing.
- CHARLES S. SPERRY, A.B., B.S. (C.E.), 1911, C.E., 1915, Colorado. Assistant Professor of Engineering Mathematics.
- JAY W. WOODROW, A.B., 1907, Drake; A.B., 1910, Oxford; Ph.D., 1913, Yale. Assistant Professor of Physics.
- *IVAN C. CRAWFORD, B.S. (C.E.), 1912, C.E., 1915, Colorado. Assistant Professor of Civil Engineering.
- HERBERT B. DWIGHT, B.S. (E.E.), 1904, E.E., 1914, Colorado. Assistant Professor of Electrical Engineering.
- PAUL M. DEAN, A.B., 1908, A.M., 1911, Colorado; Ph.D., 1916, Illinois. Assistant Professor of Chemistry.
- HUGH C. PRYOR, A.B., 1911, A.M., 1912, Colorado. Assistant Professor of Education.
- GEORGE H. LIGHT, A.B., 1899, A.M., 1900, Princeton; Ph.D., 1916, Yale. Assistant Professor of Mathematics.
- THOMAS MAITLAND MARSHALL, B.L., 1900, Michigan; M.L., 1910, Ph.D., 1914, California. Assistant Professor of History.
- CHARLES M. GRUBER, A.B., 1911, A.M., 1912, Kansas; Ph.D., 1914, Harvard. Assistant Professor of Physiology and Pharmacology.
- DONALD MCFAYDEN, A.B., 1896, Toronto; A.M., 1901, Harvard; B.D., 1904, Andover Theological Seminary; Ph.D., 1916, Chicago. Instructor in History.
- LORENA UNDERHILL, Ph.B., 1909, Chicago; A.M., 1912, Colorado. Instructor in Philosophy.
- DOROTHY M. BURTON, A.B., 1914, Colorado. Instructor in English Literature.
- MAUD E. CRAIG, A.B., 1912, A.M., 1914, Colorado. Instructor in Latin.
- OSCAR A. RANDOLPH, B.S., 1911, Missouri School of Mines; M. S., 1913, Ph.D., 1916, Illinois. Instructor in Physics.
- ARTHUR WILLIAMS, A.B., 1910, A.M., 1911, Northwestern. Instructor in Greek.
- JOHN D. COOKE, A.B., 1914, A.M., 1915, Leland Stanford. Instructor in English Literature.

* On leave of absence for war service.

MARY V. McFARLAND, A.B., 1915, Colorado. Instructor in Psychology.

RUSSELL N. LOOMIS, Ph.C., 1915, B.S. (Phar.), 1917, Colorado. Instructor in Chemistry.

HORACE B. VAN VALKENBURGH, B.S., 1905, M.S., 1912, Arkansas. Instructor in Chemistry.

BENJAMIN D. CORNELL, A.B., 1915, Colorado. Instructor in Chemistry.

BEN W. ROWLAND, A.B., 1917, Colorado. Instructor in Chemistry.

JOHN F. GREENE, B.S. (C.E.), 1916, Colorado. Instructor in Civil Engineering.

*HENRY M. SAYRE, Instructor in Accounting.

GRADUATE COMMITTEE

J. RAYMOND BRACKETT, Dean.

FRANCIS RAMALEY, Secretary.

MILO S. KETCHUM.

MILO G. DERHAM.

ARNOLD J. LIEN.

* Second semester, 1917-1918.

GENERAL STATEMENT

ADMISSION

A graduate of the University of Colorado will be admitted to the Graduate School upon application, without paying a matriculation fee. A graduate of any college or scientific school of equal rank with the University of Colorado will be admitted upon presentation of a certificate of graduation and payment of the matriculation fee of ten dollars. A student from another institution should first submit his credits to the Registrar for rating.

Only a graduate or a student who has substantially completed the requirements for the bachelor's degree will be enrolled in the Graduate School. A graduate student who elects courses exclusively of undergraduate rank will not be enrolled in the Graduate School.

Admission to the Graduate School will not be taken as equivalent to candidacy for a degree. A graduate student who wishes to become a candidate for a degree must make special application.

A major subject of study should be selected by each graduate student in conference with the Dean of the Graduate School, and the minor subjects in conference with the professor in charge of the major subject.

ADVANCED STANDING AND RESIDENCE

Credit may be given by the Graduate Committee for work done in other universities, but at least one full year of residence at the University of Colorado will be required for each higher degree. For residence requirements in Summer Session, see page 187. Credit will not be granted for work done *in absentia*, except to graduates of the University of Colorado who are candidates for the degree of Engineer. A year's residence means that a student is located at the University not later than the first day of October, and gives his undivided attention to academic work, completing not less than the equivalent of thirty semester hours, that is, fifteen hours of class work for each semester.

RESIDENCE REQUIREMENTS FOR INSTRUCTORS

To satisfy the requirement of one year of residence for the degree Master of Arts, Master of Science, Master of Science in Sani-

tary Engineering, Master of Science in Public Health, and degree of Engineering:

1. A graduate student who is an assistant in the University may satisfy the residence requirement in one year, provided he does not teach more than one-half the regular schedule, and further provided that he obtains graduate credit of not less than six hours each semester and a total credit during the year of not less than eighteen hours.

2. An instructor on full time, or an assistant on more than half time, who is a graduate student, may satisfy the residence requirement of one year in two years, providing he obtains graduate credit of not less than three hours each semester and a total credit during the two years of not less than eighteen hours.

THE DEGREE MASTER OF ARTS

APPLICATION FOR ADMISSION TO CANDIDACY.—A student who has been admitted to the Graduate School, and who wishes to become a candidate for the degree Master of Arts, should make application as soon as practicable, and in any case, not later than thirty days before the end of the first semester. The application for candidacy should include a program of studies leading to the degree, a list of undergraduate studies in the same field, a statement of any original work already accomplished, and an enumeration of honors and degrees. Application blanks will be furnished at the office of the Dean of the Graduate School. An applicant's instructors make recommendations to the Graduate Committee as soon as practicable, and in any case, not later than the end of the first semester; and the Graduate Committee, after consideration of the recommendations, decides upon the application for candidacy, as soon as may be, and in any case, not later than the first week of the second semester.

REQUIREMENTS FOR THE MASTER OF ARTS DEGREE.—The minimum requirement for the degree Master of Arts is one full year devoted to study, equivalent to not less than thirty semester hours, that is, fifteen hours of class work for each semester; the work on the thesis is included in the thirty hours. Studies leading to the degree Master of Arts must be divided between two subjects, known as the major subject and the minor subject. In special cases a second minor subject is permitted. The first minor subject must consist of study equivalent to at least six semester hours

and must lie in a different department from the major subject, but must be approved by the professor in charge of the major subject. A department is understood to mean such a division of studies as is under the charge of a head professor. A thesis, which counts for not less than four nor more than eight semester hours, must be written under the direction of the professor in charge of the major subject, and be finished and submitted for his approval not later than thirty days before the time at which the degree is to be conferred. When the thesis is accepted, printed or typewritten copies bound, to the number of two or more, at the discretion of the major professor, shall be placed in the University Library before the diploma is delivered. Such knowledge of ancient and modern languages as may be deemed necessary by the professor in charge of the major subject is required of a candidate. The written examination of each semester shall be taken upon such studies as are pursued in class, and at the end of the year such additional examination upon other subjects, upon the thesis, and upon the first semester's work, as each instructor may require. If courses have been taken during former years, however, there shall be an examination at the end covering such courses as are not taken in the final year.

ENGINEERING DEGREES

MASTER OF SCIENCE.—A candidate for the degree Master of Science must have previously received the degree B.S. in Engineering from this University; or, if he was graduated elsewhere, he must satisfy the faculty that he possesses equivalent attainments. He must choose a major subject to occupy one-half his time from the graduate courses offered in the line in which he received his bachelor's degree. Study and residence for not less than one year and a thesis on an approved subject are required. A year's work includes thirty hours, of which not less than six hours should be given to the thesis. The thesis in form shall comply with the specifications adopted by the faculty of the College of Engineering for the bachelor's thesis. Two bound copies of the thesis shall be deposited with the University Library before the diploma is conferred. The committee in charge of the work of each candidate shall consist of the major professor and the heads of the departments of Civil, Electrical and Mechanical Engineering.

MASTER OF SCIENCE IN SANITARY ENGINEERING.—A candidate for the degree Master of Science in Sanitary Engineering must have

previously received the degree B.S. in Engineering from this University; or, if he was graduated elsewhere, he must satisfy the faculty that he possesses equivalent attainments. In his previous work he must have included courses in Elementary Bacteriology, Water Supply, Sewerage and Structural Engineering. Study and residence for not less than one year and a thesis on an approved subject are required. A year's work includes thirty hours, of which not less than six hours should be given to the thesis. The thesis in form shall comply with the specifications adopted by the faculty of the College of Engineering for the bachelor's thesis. Two bound copies of the thesis shall be deposited with the University Library before the diploma is conferred.

ENGINEER.—A candidate for the degree Civil Engineer, Electrical Engineer or Mechanical Engineer must have previously received the degree B.S. in Engineering from this University; or if he was graduated elsewhere, he must satisfy the faculty that he possesses equivalent attainments. He must choose major subjects equal to not less than twenty semester hours in the same course as that in which he received his undergraduate engineering degree, and in addition must choose minor subjects not to exceed ten semester hours from the same or other engineering courses. A thesis on a topic to be approved by his major professor is required in addition to the thirty hours' work covered by the major and minor subjects. The thesis shall be equivalent to not less than six semester hours' credit. A further requirement is that the candidate must have had responsible charge of engineering work for at least one year. Residence at the University for at least one year is required of all resident graduate students. The academic work of graduates of this University need not be done in residence. A non-resident candidate must be registered for at least two years before coming up for his degree. The thesis and all work required for the degree must be completed at least one month before the annual commencement at which the candidate expects to receive his degree. The thesis in form shall comply with the specifications adopted by the faculty of the College of Engineering for the bachelor's thesis. Two bound copies of the thesis shall be deposited with the University Library before the diploma is conferred. The candidate shall be approved at the time of registration and the final examination shall be given by a committee composed of the heads of the Civil, Electrical and Mechanical Engineering Departments. The report

of the examining committee is transmitted to the Dean of the Graduate School.

MEDICAL DEGREES

MASTER OF SCIENCE IN PUBLIC HEALTH.*—A candidate for the degree Master of Science in Public Health must have received the degree Bachelor of Arts or the degree Doctor of Medicine in an approved institution, must have spent subsequently at least one year in this University in the study of Public Health problems and administration, and must have presented a satisfactory thesis. The course of study must be approved during the first week of the academic year. A specified course is recommended, but this will be altered to meet particular needs.

DOCTOR OF PUBLIC HEALTH.*—A candidate for the degree Doctor of Public Health must have spent at least two years in graduate study of Public Health problems and administration, and must have presented a satisfactory thesis. The course of study must be approved during the first week of the academic year. In general, the work of the first year is the same as that required for the degree Master of Science in Public Health. The second year is spent largely in the field in actual Public Health administration and in research upon an approved topic. Advanced standing may be granted to students who have completed in other approved universities work similar to that required here for the first year. The last year of the course must be taken in residence in this University.

DOCTOR OF OPHTHALMOLOGY.—A candidate for the degree Doctor of Ophthalmology must be a graduate of a standard medical school and must have the preliminary education in mathematics and optics. In order to receive the degree D.Oph., he must have done at least three years of graduate work with Ophthalmology as a major subject. One or more courses in Ophthalmology must be completed in the University of Colorado. Each candidate must pass an examination, written, oral, microscopical, and clinical; and must submit an original thesis and stand examination thereon. Six weeks residence in Denver is required.

THE DEGREE DOCTOR OF PHILOSOPHY

APPLICATION FOR ADMISSION TO CANDIDACY.—A student who has been admitted to the Graduate School, and who wishes to become a candidate for the degree Doctor of Philosophy, may make applica-

* Work for the degrees Master of Science in Public Health and Doctor of Public Health will not be offered during the year 1918-1919.

tion at any time after admission, provided that he shall not apply later than eight months before the time at which he expects to receive the degree. The form of application is the same as for Master of Arts degree.

REQUIREMENTS FOR THE DEGREE DOCTOR OF PHILOSOPHY.—A reading knowledge of both French and German, with special reference to the candidate's field of study, shall be required before admission to candidacy, and upon this requirement the applicant must satisfy a committee consisting of the heads of the French and the German departments and of the professor in charge of the major subject. A knowledge of other languages may also be required, if demanded by the professor in charge of the major subject. The minimum requirement for the degree Doctor of Philosophy is not less than three full years devoted to study, equivalent to not less than sixty semester hours, and to the preparation of a thesis. But the degree shall be granted not for the completion of any specified period of residence or number of hours' study, but for high attainments in general, and marked ability in a special field, including particularly power in original investigation proved by a thesis. Part of the time required may be spent in some other university of approved standing, provided at least one year of two consecutive semesters is spent in the University of Colorado. Studies leading to the degree Doctor of Philosophy must be divided into three groups, known as the major subject, the first minor subject, and the second minor subject. The first minor subject shall consist of the equivalent of at least fifteen semester hours, and the second of eight. Each subject shall be in a different department from the others. A thesis, showing power in original investigation, shall be written upon some subject approved by a committee consisting of the heads of the three departments concerned, and shall be finished and submitted in typewritten form at least sixty days before the time at which the degree is to be conferred, and must be satisfactory to the committee of three above mentioned. When the thesis is accepted, printed or typewritten copies, bound, to the number of three or more at the discretion of the committee, shall be placed in the University Library before the diploma is delivered. The regular written examinations on such subjects as are taken in class may be required at the discretion of each instructor, but, in any case, a preliminary and a final examination are required. The preliminary examination is oral, or oral and written, the oral examination being conducted by

all instructors concerned, in the presence of a committee consisting of the heads of the departments in which the major and minor subjects lie, and is held at least six months before the time at which the degree is to be conferred. The final examination is oral, and is conducted in the presence of a committee consisting of the heads of the departments interested and two other professors appointed by the Dean of the Graduate School, and in the presence of visitors. The report of the examining committee is transmitted to the Dean of the Graduate School.

SUMMER SESSION WORK FOR DEGREE MASTER OF ARTS

RULES AND REQUIREMENTS.—In general, the rules and requirements for the degree Master of Arts in the regular sessions of the University apply to students working toward that degree in the Summer Session, except the rules as to matriculation, residence, registration, application for candidacy, and examination. The requirements as to residence may be met by attending four full Summer Sessions. A student who intends to enter the Summer Session and who wishes to work toward the degree Master of Arts, should communicate early in the Spring with the resident professor in charge of the major subject, and should consult with the instructor in charge of the major subject in the Summer Session before registering for courses. He should make application for admission to the Graduate School at the beginning of the first Summer Session attended and should make application for candidacy by September preceding the Summer Session in which he intends to finish his required work. A graduate of another university must pay the matriculation fee of ten dollars before the close of the first Summer Session; but he shall pay the matriculation fee only once, and shall be exempt from all other fees except the Summer Session fees and the diploma fee. A candidate for the Master's degree takes the regular examinations upon work done in class, together with such supplementary examinations, as his instructors may require, and on completion of the required work, he shall take a final examination covering all courses of study pursued and his thesis. This final examination is oral, or oral and written, the oral examination being conducted in the presence of a committee, two members of which shall be regular professors of the faculty of the University of Colorado.

WORK, PARTLY IN ABSENTIA, FOR DEGREE MASTER OF ARTS

By written consent of the major department concerned, filed with the Dean of the Graduate School, any person eligible to candidacy for a second degree, who has done satisfactory graduate work during one Summer Session of the University (except as noted below), may be admitted to candidacy for a Master's Degree upon the following terms: The candidate must conform to all of the regulations for candidates for the Master's Degree with exception of the requirement of residence for one year. During two or more successive Summer Sessions, in addition to the one above named, the candidate must pursue a course of advanced study arranged and approved by the department of the University in which his major subject is to be taken. During the included two years between the first and third of these Summer Sessions, while not in residence at the University, he must pursue through the Extension Division work in continuation of, or collateral to, this major subject, to the extent of twelve of the thirty hours required for the Master's Degree. The requirement of attendance at a Summer Session before graduate work is permitted under this plan may be waived, with the consent of the departments involved, in the case of alumni of this University or of Extension classes conducted by members of the University faculty. This does not excuse the candidate from residence at the University during at least three Summer Sessions.

ORDER OF DESCRIPTION OF COURSES

Few of the courses outlined below are available in any one year, but each department usually offers one or more every year that may be taken as a minor for the Master's Degree. Courses not scheduled here may be arranged to meet needs of candidates of ability. Students intending to take courses toward the degree Doctor of Philosophy or toward a major for Master of Arts will find advantage in consulting with the Dean and the head of the department concerned as early as the middle of the previous semester.

Biology.

Chemistry.

Civil Engineering.

Education.

Electrical Engineering.

English Language.

Geology, Mineralogy and

Geography.

Germanic Languages and

Literatures.

Greek Language and Literature.	Music.
History.	Ophthalmology.
Latin Language and Literature.	Philosophy.
Law.	Physics.
Literature, Comparative and English.	Psychology.
Mathematics.	Romance Languages and Literatures.
Mechanical Engineering.	Social Science.

DESCRIPTION OF COURSES*

BIOLOGY

I. GENERAL BIOLOGY

PROFESSORS COCKERELL AND RAMALEY, AND ASSISTANT

PROFESSOR ELLIS:—

5. HISTORY OF BIOLOGY.
6. PRINCIPLES OF HEREDITY.
7. PLANKTONOLOGY.
8. MICROBIOLOGY.
9. PUBLIC HEALTH PROBLEMS.
10. TEACHERS' COURSE IN BIOLOGY.

For Graduates Only.

12. SPECIAL PROBLEMS.

Heredity; History of Biology; Biological Pedagogics.

II. BOTANY

PROFESSOR RAMALEY:—

3. COLLEGE BOTANY.
Open as a minor.
4. PLANT MORPHOLOGY.
Open as a minor.
5. PLANT ECOLOGY.
6. PLANT ANATOMY.
- 7-8. BOTANY OF COLORADO.
9. MYCOLOGY.
10. ECOLOGY AND TAXONOMY.

* Graduate courses that may be elected by undergraduates also are listed under the same numbers as in the College of Liberal Arts, see page 61. Courses for graduates only are described here.

For Graduates Only.

11. SPECIAL PROBLEMS.

Plant Anatomy, Ecology, Agrostology, Floristics.

Research work in Ecology is especially provided at the Summer Mountain Laboratory at Tolland, Colorado. Prospective students should consult the Summer Session announcement and communicate with Professor Francis Ramaley, Boulder, Colorado, who is in charge.

III. ZOOLOGY

PROFESSOR COCKERELL AND ASSISTANT PROFESSOR ELLIS:—

1-2. GENERAL ZOOLOGY.

Open as a minor.

3-4. CYTOLOGY.

7-8. COMPARATIVE ANATOMY OF VERTEBRATES.

9-10. ICHTHYOLOGY.

11-12. ENTOMOLOGY.

13. FIELD ZOOLOGY.

For Graduates Only.

15. SPECIAL PROBLEMS.

Taxonomy of Hymenoptera, Coccidæ (scale insects), Paleontology, Ichthyology, Protozoology, Pond and Stream Zoology, and other topics as opportunity offers.

CHEMISTRY

PROFESSOR EKELEY AND ASSISTANT PROFESSOR DEAN, AND MR. CORNELL, MR. VAN VALKENBURGH, AND MR. LOOMIS:—

3-4. QUALITATIVE ANALYSIS.

5-6. QUANTITATIVE ANALYSIS.

7. ANALYSIS OF IRON AND STEEL.

8. SANITARY WATER ANALYSIS.

9. MINERAL WATER ANALYSIS.

10. ORE ANALYSIS.

11. GAS ANALYSIS.

12. ORGANIC CHEMISTRY.

Lectures.

14. LABORATORY PRACTICE IN ORGANIC PREPARATIONS.

15. ELEMENTARY ANALYSIS OF ORGANIC COMPOUNDS.

16. FOOD ANALYSIS.
17. PHYSICAL CHEMISTRY.
Lectures.
18. PHYSICAL CHEMISTRY.
Laboratory.
19. ELECTROCHEMICAL ANALYSIS.
- 20-21. ADVANCED ANALYTICAL CHEMISTRY.
22. INDUSTRIAL CHEMISTRY.
23. HISTORY OF CHEMISTRY.
- 24, 25, 26. DRUG ASSAYING.
27. ADVANCED FOOD ANALYSIS.

NOTE—Candidates for the Master's degree, taking chemistry as a major, must have completed courses 1, 2, 3, 4, 5, 6, 10, 12, 14, 17, and 18. Courses from Course 6 on may be counted toward the thirty-hour requirement, in case they have not already been counted toward the bachelor's degree; in such cases, special courses in chemistry may be arranged for.

CIVIL ENGINEERING

PROFESSOR KETCHUM, ASSISTANT PROFESSORS HUNTINGTON,
AND PHELPS:—

For Graduates Only.

101. RAILWAY LOCATION AND CONSTRUCTION.
102. YARDS AND TERMINALS.
103. SIGNAL ENGINEERING.
104. RAILWAY OPERATION, MANAGEMENT, AND VALUATION.
105. TUNNELS AND CANALS.
110. ADVANCED BRIDGE DESIGN.
111. SWING AND MOVABLE BRIDGES.
112. METALLIC ARCHES.
113. INDETERMINATE STRUCTURES.
114. STEEL OFFICE BUILDING CONSTRUCTION.
115. STEEL MINE AND MILL STRUCTURES.
120. REINFORCED CONCRETE CONSTRUCTION.
130. GENERAL WATER WORKS CONSTRUCTION AND MANAGEMENT.
131. TANKS, STANDPIPES AND RESERVOIRS.
140. SEWAGE PURIFICATION AND DISPOSAL WORKS.
141. GENERAL SEWERAGE DESIGN AND CONSTRUCTION.
150. IRRIGATION ENGINEERING STRUCTURES.

151. IRRIGATION ENGINEERING STUDIES.
152. DAMS AND RESERVOIRS FOR IRRIGATION.
160. ADVANCED HYDRAULICS.
161. ADVANCED APPLIED MECHANICS.

EDUCATION

PROFESSORS THOMPSON, CLAPP, COLE, AND LIBBY:—

- 2.* COMPARATIVE PSYCHOLOGY.
- 3.* ADVANCED PSYCHOLOGY.
- 4.* PATHOLOGICAL PSYCHOLOGY.
- 5-6.* EXPERIMENTAL PSYCHOLOGY.
- 7.* EDUCATIONAL PSYCHOLOGY.
- 10.* MENTAL TESTS.
7. HISTORY AND PHILOSOPHY OF EDUCATION.
8. HISTORY AND PHILOSOPHY OF MODERN EDUCATION.
9. SECONDARY EDUCATION.
10. ANTHROPOLOGY.
11. ETHNOLOGY.
12. SOCIAL PSYCHOLOGY (PSYCHOLOGY 11).
13. EDUCATION AND SOCIETY.
14. SCHOOL SUPERVISION.
15. PRACTICUM IN EDUCATION.
16. SEMINAR IN EDUCATION.

For Graduates Only.

- 14.* ADVANCED EXPERIMENTAL PSYCHOLOGY.

ELECTRICAL ENGINEERING

PROFESSOR EVANS, ASSISTANT PROFESSORS JENKINS AND DWIGHT,
AND MR. MCCORMICK:—

For Graduates Only.

101. THEORY OF ALTERNATING CURRENTS.
102. ANALYSIS AND DESIGN OF ALTERNATING CURRENT APPARATUS.
103. ANALYSIS AND DESIGN OF DIRECT CURRENT APPARATUS.
104. SWITCHBOARD DESIGN AND CONSTRUCTION.
105. THE TESTING OF ELECTRICAL MACHINERY.
106. ELECTRICAL ENGINEERING RESEARCH.
107. TELEPHONES AND TELEGRAPH.

* These numbers refer to courses in the Department of Psychology.

- 108. ELECTRICAL TRANSMISSION OF POWER.
- 109. ELECTRIC LIGHT AND POWER PLANTS.
- 110. ELECTRO-METALLURGICAL INDUSTRIES.
- 111. ADVANCED ELECTRICAL ENGINEERING LABORATORY.
- 112. ILLUMINATING ENGINEERING.

ENGLISH LANGUAGE

PROFESSOR McLUCAS:—

- 9-10. ANGLO-SAXON.
- 11. MIDDLE ENGLISH.
- 12. CHAUCER.
- 13. SHAKESPEARE.
- 14. PRE-SHAKESPEREAN DRAMA.

GEOLOGY, MINERALOGY, AND GEOGRAPHY

PROFESSORS GEORGE, HENDERSON, AND CRAWFORD, AND ASSISTANT
PROFESSOR WORCESTER:—

I. GEOLOGY

- 5-6. ECONOMIC GEOLOGY.
- 7. OIL GEOLOGY.
- 8. GEOLOGIC SURVEYING.
- 9-10. ADVANCED GEOLOGY.
- 11-12. GEOLOGY OF COLORADO.
- 13. GEOLOGIC MATERIALS.
- 14. GEOLOGY CULTURE COURSE.
- 15-16. PALEONTOLOGY.

For Graduates Only.

- 17-18. RESEARCH GEOLOGY. One or both semesters.

The work will be chiefly individual, and will depend largely on the preparation of the student. The vicinity of Boulder, and the State as a whole, offer a wide range of problems for research. The credit allowed will depend upon the time given to the work and the character of the results obtained.

NOTE—The establishment of the State Geological Survey gives very exceptional opportunities to a limited number of advanced students in geology.

II. MINERALOGY AND PETROLOGY

4. FIRE ASSAYING.
- 5-6. ADVANCED MINERALOGY.
7. ADVANCED CRYSTALLOGRAPHY.
8. OPTICAL MINERALOGY.
9. PETROGRAPHY.

For Graduates Only.

- 10-11. PETROLOGY. Throughout the year. 2 or 3 h. each semester.

An advanced course which includes the microscopic study of rocks from typical districts, reading of petrologic literature, and one weekly period for lectures and reports.

- 12-13. CHEMICAL MINERALOGY. Both semesters.

Either quantitative-analytic mineralogy or the investigation of special problems involving laboratory and library research may be undertaken by students who have had adequate preparation.

III. GEOGRAPHY

3. ADVANCED PHYSIOGRAPHY.
4. CLIMATOLOGY.

GERMANIC LANGUAGES AND LITERATURES

PROFESSOR VAN SWERINGEN BAUR AND ASSISTANT PROFESSOR BAUR:—

10. THE GERMAN DRAMA OF THE NINETEENTH CENTURY.
11. ADVANCED COMPOSITION.
13. GOETHE'S FAUST: PARTS I AND II.
14. STUDIES IN THE HISTORY OF THE GERMAN NOVEL.
15. THE GERMAN NOVELLE.
18. THE HISTORY OF GERMAN LITERATURE FROM THE EARLIEST TIMES TO THE TIME OF KLOPSTOCK.
19. THE HISTORY OF GERMAN LITERATURE FROM THE TIME OF KLOPSTOCK TO THE PRESENT.
20. GERMANIC HERO-SAGAS.
21. GERMANIC MYTHOLOGY.
23. POETICS.

For Graduates Only.

25. DEUTSCHE AUFSÄTZE. 2 h.
26. DEUTSCHE PHONETIK UND AUSSPRACHE. 2 h.

27. **GOTHIC.** One semester. 3 h.
Phonology and inflections of Gothic; relation of Gothic to German and English; reading of extracts in Braune's *Gotische Grammatik*.
28. **OLD HIGH GERMAN.** Two semesters. 3 h.
Braune's *Althochdeutsche Grammatik*, and *Althochdeutsches Lesebuch*.
29. **MIDDLE HIGH GERMAN.** Two semesters. 2 h.
Paul's *Mittelhochdeutsche Grammatik*; reading of Hartman von Aue's *Der arme Heinrich*.
30. **OLD ICELANDIC.** Two semesters. 3 h.
Phonology and inflection of Old Icelandic, from Noreen's *Altisländische and Altnorwegische Grammatik*.
Reading of Heusler's *Zwei Isländer-Geschichten*.
31. **THE EDDA.** Both semesters. 3 h.
Gering's Edition of Hildebrand's *Edda Lieder*.
32. **EINFÜHRUNG IN DAS STUDIUM DER GERMANISCHEN SPRACHEN.** 3 h.
33. **GOETHE SEMINAR.** 2 h.

GREEK LANGUAGE AND LITERATURE

PROFESSORS NORLIN AND HELLEMS:—

8. **PLATO.**
Interpretation of the Republic with lectures on Platonism.
9. **COMEDY.**
Aristophanes' *Clouds* and *Frogs*.
10. **GREEK HISTORIANS.**
Herodotus and Thucydides.
11. **PASTORAL POETRY.**
Theocritus, Bion, and Moschus.
12. **LYRIC POETS.**
Early lyric poets with introduction to Pindar and Bacchylides.
13. **ADVANCED PROSE COMPOSITION.**

For Graduates Only.
19. **THE TRAGEDIES OF AESCHYLUS.**
20. **ARISTOTLE'S POETICS.**
21. **HISTORY OF GREEK COMEDY.**
22. **INTRODUCTION TO GREEK EPIGRAPHY.**

23. STUDY OF GREEK DIALECTS FROM INSCRIPTIONS.
24. SEMINAR IN POETS OF ALEXANDRIAN PERIOD.
25. SEMINAR IN EARLY GREEK PHILOSOPHY.
26. SEMINAR IN GREEK RELIGION AND ETHICS.

HISTORY

PROFESSOR WILLARD, ASSISTANT PROFESSORS ECKHARDT AND MARSHALL, AND DR. MCFAYDEN:—

Open to Graduates on Consultation.

13. THE POLITICAL THEORIES OF PLATO AND ARISTOTLE.
14. THE FALL OF THE ROMAN REPUBLIC.
15. THE ROMAN EMPIRE.
16. THE MEDIEVAL CHURCH AND THE REFORMATION.
17. ENGLISH MEDIEVAL INSTITUTIONS.
18. THE ITALIAN RENAISSANCE.
19. THE RENAISSANCE IN NORTHERN EUROPE.
20. ADVANCED MODERN EUROPEAN HISTORY.
22. THE WESTWARD MOVEMENT.
25. RESEARCH COURSE IN THE HISTORY OF THE WEST.
26. HISTORICAL METHODS AND BIBLIOGRAPHY.
28. HISTORIOGRAPHY.

For Graduates Only.

29. THE ENGLISH MEDIEVAL BOROUGH. Throughout the year. 3 h.
30. SEMINAR IN ANCIENT HISTORY. Throughout the year. 2 or 3 h.

LATIN LANGUAGE AND LITERATURE

PROFESSORS HELLEMS AND DERHAM:—

20. LUCRETIVS.
23. MARTIAL.
26. SUTONIUS.
28. ADVANCED LATIN PROSE.
29. GREEK AND ROMAN ARCHÆOLOGY.
30. MINOR LATIN POETS.

A study of the more significant among the minor poets.

For Graduates Only.

31. ROMAN LAW.
 - (1) Gaii Institutiones Juris Civilis. 3 h.
 - (2) Elements of Roman Law. 2 h.

32. ROMAN ADMINISTRATION. 3 h.

The development of Roman public institutions in their historical sequence.

33. ROMAN TOPOGRAPHY. 2 h.

The topography of Rome in the historical development of the city.

34. INTERPRETATION OF EARLY LATIN. 2 h.

Selected examples of Early Latin.

35. EPIGRAPHY. 2 h.

Cagnat's *Cours d'Epigraphie Latine*; Egbert's Introduction; handling of the *Corpus Inscriptionum Latinarum*.

36. LATIN MORPHOLOGY. 2 h.

The subject will be approached from the comparative side.

37. LATIN SYNTAX. 2 h.

The subject will be treated comparatively.

38. LATIN PALÆOGRAPHY. 2 h.

An introduction to the subject.

39. SEMINAR ON TRAJAN.

A study of the sources for the life and reign of Trajan; particular stress will be laid on the epigraphical side.

40. TACITUS. 2 h.

A rapid reading course in the *Annals* with a consideration of the historical problems raised.

41. PERSIUS. 2 h.

Interpretation of the text; Stoicism in the early Empire.

42. ROMAN PROVINCIAL ADMINISTRATION.

Pliny, *Letters*, book X; selections from Cicero's correspondence.

LAW

PROFESSOR FLEMING:—

CONSTITUTIONAL LAW. 5 h.

IRRIGATION. 2 h.

MINING LAW. 3 h.

PROFESSOR HADLEY:—

PRIVATE AND MUNICIPAL CORPORATIONS. 6 h.

PUBLIC UTILITIES. 2 h.

PROFESSOR ARTHUR:—

PROPERTY (including Wills). 6 h.

CONTRACTS. 6 h.

SALES OF PERSONAL PROPERTY. 3 h.

ASSISTANT PROFESSOR PATTERSON:—

AGENCY. 2 h.

LITERATURE, COMPARATIVE AND ENGLISH

PROFESSOR BRACKETT, DEAN BIGELOW, MR. COOKE, AND MISS BURTON:—

1. ART FORM.
8. SHAKESPEARE.
9. THE GREAT DRAMA.
12. WORLD DRAMA.
13. LYRIC POETRY.
14. THE GREAT EPICS.
15. MASTERPIECES OF PROSE FICTION.
16. MILTON.
17. SHELLEY.
18. TENNYSON.
19. BROWNING.
21. LITERARY FORMS OF TODAY.

For Graduates Only.

22. STUDIES IN VICTORIAN LITERATURE AND ART. Throughout the year. 5 h. 1914.
 Ruskin and Turner; the Pre-Raphaelite Movement; the Rossettis; Burne-Jones; Holman Hunt; George Frederick Watts; William Morris; Walter Crane.
23. THE PREDECESSORS OF SHAKESPEARE. 5 h.
24. THE RENAISSANCE IN EUROPE. 5 h.
25. THE TEACHING OF LITERATURE.
26. THE HISTORY OF ENGLISH PROSODY. 1917.
27. THE HISTORY OF CRITICISM. 1917.
28. THE RHYTHMS OF ENGLISH PROSE. 1916.

MATHEMATICS

PROFESSOR DELONG, ASSISTANT PROFESSOR LIGHT, AND MISS KENDALL:—

11. DIFFERENTIAL CALCULUS. As a minor to majors in science.
12. INTEGRAL CALCULUS. As a minor to majors in science.

13. DIFFERENTIAL EQUATIONS.
17. ANALYTIC SOLID GEOMETRY.
18. COMPLEX FUNCTIONS.
21. PROJECTIVE GEOMETRY.
22. MODERN GEOMETRY.
23. TRANSCENDENTAL FUNCTIONS
24. CONTINUATION COURSES. See page 99.
25. CONTINUATION COURSES. See page 99.

For Graduates Only.

26. HIGHER PLANE CURVES.
27. THEORY OF INVARIANTS.
28. MATHEMATICAL THEORY OF PROBABILITY AND SOME OF ITS APPLICATIONS.
29. DIFFERENTIAL GEOMETRY.
30. DIFFERENTIAL EQUATIONS FOR PHYSICISTS.
31. CALCULUS OF VARIATIONS.
32. CELESTIAL MECHANICS.
33. PERIODIC ORBITS.

MECHANICAL ENGINEERING

PROFESSORS HUNTER AND BLACK, AND ASSISTANT PROFESSOR BAUER:—

For Graduates Only.

101. ADVANCED MACHINE DESIGN.
102. GRAPHICS AND KINEMATICS.
103. ADVANCED STEAM ENGINEERING.
104. EXPERIMENTAL ENGINEERING.
105. PNEUMATICS.
106. RAILWAY MECHANICAL ENGINEERING.
107. MECHANICAL REFRIGERATION.
108. ADVANCED GAS ENGINES.

MUSIC

PROFESSOR CHADWICK:—

3. COUNTERPOINT.
4. CANON AND FUGUE.
5. COMPOSITION AND ORCHESTRATION.
6. HISTORY OF MUSIC.
7. AESTHETICS AND PHILOSOPHY OF MUSIC.

OPHTHALMOLOGY

For courses see page 258.

PHILOSOPHY

PROFESSOR LIBBY, AND MISS UNDERHILL:—

All candidates must get from the Department of Philosophy a written statement of specific requirements at the beginning of each year. The *thesis-subject* may be chosen from any branch of Philosophy.

For A.M.

For *major* high grades in undergraduate courses and advanced readings in sources of Philosophy, and in Metaphysics; for *minor*, a thorough knowledge of the whole history of Philosophy.

For Ph.D.

For major, courses for A.M. major, with further advances in history of Philosophy and in special disciplines. Candidate must be able to read German and French at sight. For minor, advanced history of Philosophy only, including special knowledge of two philosophers.

PHYSICS

PROFESSOR LESTER, ASSISTANT PROFESSOR WOODROW, DR. RANDOLPH, AND MR. FINNEY:—

For Graduates and Undergraduates.

5. THEORETICAL MECHANICS—STATICS.
6. THEORETICAL MECHANICS—DYNAMICS.
8. THEORY OF ELECTRICITY AND MAGNETISM.
9. ELECTRICAL MEASUREMENTS.
10. THEORY OF ELECTRICITY AND MAGNETISM.
11. PROPERTIES OF MATTER. Omitted 1918-1919.
12. HEAT AND THERMODYNAMICS. Omitted 1918-1919.
13. LIGHT.
14. ADVANCED ELECTRICAL MEASUREMENTS. Second semester. Hours and credit to be arranged.
21. INTRODUCTION TO MATHEMATICAL ASTRONOMY.

Primarily for Graduates.

30. KINETIC THEORY OF GASES. Second semester. 2 h. Omitted 1918-1919.

Lectures and recitations.

The important physical properties of gases will be considered from the viewpoint of the kinetic theory of matter.

Prerequisite: Course 12 and calculus, Course 6 advised.

31. CONDUCTION OF ELECTRICITY THROUGH GASES. Second semester. 3 h.

Lectures and recitations.

A course dealing with the properties of ions and electrons in their relation to the passage of electricity through gaseous media.

Prerequisite: Courses 6, 8, 9, and calculus.

32. VECTOR ANALYSIS. Throughout the year. 2 h.

A study of vector analysis as developed by Gibbs with applications to problems of mathematical physics.

Prerequisite: Courses 6, 8, and calculus; differential equations advised.

33. ADVANCED ANALYTICAL MECHANICS. Second semester. 3 h.

Omitted in 1918-1919.

Prerequisite: Courses 5, 6, calculus, and differential equations.

34. ADVANCED MATHEMATICAL PHYSICS. Throughout the year. Hours and credit to be arranged.

A course dealing with certain phases of theoretical physics and involving a somewhat extensive knowledge of physical facts and theories and considerable mathematical equipment.

Prerequisite: permission of the instructor.

35. RADIOACTIVITY. First semester: lectures, 2 hours. Second semester: laboratory work, three to six hours. 2 h. Omitted in 1918-1919.

A study of the radio-elements and the phenomena and theory of atomic disintegration. Laboratory work in detecting and measuring radio-activity.

Prerequisite: Courses 1 to 4 inclusive, 8 and calculus.

36. ELECTRON THEORY. Second semester. 3 h.

A course of lectures and reading dealing with the evidence which has led to the idea of the electron, the atomic structure of electricity and the corpuscular theory of matter; the bearing of the electron theory on the explanation of various physical phenomena.

Prerequisite: permission of the instructor.

37. JOURNAL CLUB. An organization composed of all instructors, graduate, and advanced undergraduate students in the departments of physics and physical chemistry, meeting once a week from 4:00 to 6:00 for the discussion of recent research.

PSYCHOLOGY

PROFESSORS COLE AND THOMPSON:—

2. COMPARATIVE PSYCHOLOGY.
3. ADVANCED PSYCHOLOGY.
4. PATHOLOGICAL PSYCHOLOGY.
- 5-6. EXPERIMENTAL PSYCHOLOGY.
7. EDUCATIONAL PSYCHOLOGY.
8. THE PSYCHOLOGY OF GRAMMAR-SCHOOL AND HIGH-SCHOOL SUBJECTS.
11. SOCIAL PSYCHOLOGY. (EDUCATION 12.)
12. CHILD STUDY.
13. ANATOMY OF THE CENTRAL NERVOUS SYSTEM.

For Graduates Only.

14. ADVANCED EXPERIMENTAL PSYCHOLOGY.

Students in this course will be expected to carry on systematic investigations in special problems.

ROMANCE LANGUAGES AND LITERATURES

PROFESSOR AYER:—

FRENCH

- 7-8. HISTORY OF FRENCH LITERATURE. 4 h.
10. FRENCH SHORT STORIES. 2 h.
11. FRENCH DRAMA. 2 h.
12. FRENCH LITERARY CRITICISM. 2 h.
13. SYNTAX OF THE FRENCH VERB. 2 h.

For Graduates Only.

14. OLD FRENCH WITH COMPARATIVE ROMANCE PHILOLOGY. 2 h.
Cledat's Chrestomathie der Moyen-Age.
15. COMPARATIVE ROMANCE SYNTAX ON BASIS OF FRENCH. 2 h.

SPANISH

- 5-6. NINETEENTH CENTURY DRAMA AND NOVEL; SEVENTEENTH CENTURY DRAMA AND NOVEL. 6 h.

For Graduates Only.

7. OLD SPANISH. 2 h.

Comparative Romance Philology with special reference to Spanish; Ford's Old Spanish Readings.

ITALIAN

3. DANTE'S DIVINE COMEDY. 2 h.

4. ALFIERI AND GOLDONI. 2 h.

For Graduates Only.

5. OLD ITALIAN. 2 h.

Comparative Romance Philology, with special reference to Italian. Monaci's Crestomazia Italiana dei primi secoli.

PORTUGUESE

For Graduates Only.

1. GRAUERT'S PORTUGUESE GRAMMAR, with reading from the Boletim da Uniao Pan-Americana. 2 h.

A quick course in grammar with much sight reading.

Prerequisite: French, Spanish, and Italian.

SOCIAL SCIENCE

PROFESSORS BUSHEE AND LIEN, AND MR. INGRAHAM:—

I. ECONOMICS

5. PRINCIPLES OF ADVERTISING.
6. STATISTICS.
9. LABOR PROBLEMS.
11. MONEY AND BANKING.
12. TRANSPORTATION.
13. CORPORATIONS.
14. TAXATION.
15. LIFE INSURANCE.
17. TRUSTS.
18. BUSINESS ORGANIZATION AND SCIENTIFIC MANAGEMENT.

For Graduates Only.

21. HISTORY AND CRITICISM OF ECONOMIC THEORIES. First semester.
2 h.

Lectures, reading, reports.

The lectures will deal with the economic ideas of Plato and Aristotle; the influence of the Roman Law; the Canonists; Mercantilists; Physiocrats; Adam Smith; Ricardo; Malthus; John Stuart Mill; the Historical School; Jevons and the Austrian School. The aim is not only to study the content of economic theory, but also to exhibit theory in the light of political and social conditions.

22. SEMINAR IN ECONOMICS. Throughout the year. 2 h.

II. SOCIOLOGY

1. PRINCIPLES OF SOCIOLOGY.
2. PROBLEMS IN SOCIOLOGY.
3. SOCIALISM.
5. ADVANCED THEORY OF SOCIOLOGY.

For Graduates Only.

7. SEMINAR IN SOCIOLOGY. Throughout the year. 2 h.

III. POLITICAL SCIENCE

3. COMPARATIVE EUROPEAN GOVERNMENT.
4. MUNICIPAL GOVERNMENT.
5. POLITICAL PARTIES AND PARTY PROBLEMS.
6. CONSULAR AND DIPLOMATIC SERVICE.
7. INTERNATIONAL LAW.
8. MUNICIPAL PROBLEMS.

SCHOOL OF MEDICINE

FACULTY*

†LIVINGSTON FARRAND, A.M., M.D., LL.D., President of the University.

GEORGE NORLIN, Ph.D., Acting President of the University.

WILLIAM P. HARLOW, A.B., M.D., Dean, Emeritus.

CHARLES N. MEADER, A.B., M.D., *Denver*, Dean; Professor of Medicine, and Head of Department.

ROSS C. WHITMAN, A.B., M.D., *Boulder*, Secretary of Boulder Division; Professor of Pathology and Head of Department.

JAMES R. ARNEILL, A.B., M.D., Professor of Medicine, Emeritus.

SHERMAN G. BONNEY, A.M., M.D., Professor of Medicine, Emeritus.

T. MITCHELL BURNS, M.D., Professor of Obstetrics, Emeritus.

JOHN CHASE, A.B., M.D., Professor of Ophthalmology, Emeritus.

DAVID H. COOVER, M.D., Professor of Ophthalmology, Emeritus.

WILLIAM B. CRAIG, M.D., Professor of Surgery, Emeritus.

WILLIAM H. DAVIS, M.D., Professor of Dermatology, Emeritus.

JOHN M. FOSTER, M.D., Professor of Oto-laryngology, Emeritus.

LUMAN M. GIFFIN, M.D., Professor of Surgery, Emeritus.

THOMAS H. HAWKINS, A.M., M.D., LL.D., Professor of Surgery, Emeritus.

‡WALTER A. JAYNE, M.D., Professor of Gynecology, Emeritus.

‡FRANCIS H. McNAUGHT, M.D., Professor of Obstetrics, Emeritus.

WILLIAM C. MITCHELL, M.D., Professor of Bacteriology, Emeritus.

GEORGE B. PACKARD, M.D., Professor of Orthopedics, Emeritus.

‡CHARLES A. POWERS, A.M., M.D., Professor of Surgery, Emeritus.

E. BARBER QUEAL, M.D., Professor of Physiology, Emeritus.

EDMUND J. A. ROGERS, A.M., M.D., Professor of Surgery, Emeritus.

WILLIAM J. ROTHWELL, M.D., Professor of Medicine, Emeritus.

THOMAS E. TAYLOR, A.B., M.D., Professor of Obstetrics, Emeritus.

CHARLES B. VAN ZANT, M.D., Professor of Physiology, Emeritus.

HERBERT B. WHITNEY, A.B., M.D., Professor of Medicine, Emeritus.

* Arranged alphabetically—professors, assistant professors, lecturers, instructors, assistants—without reference to length of service.

† On leave of absence, June, 1917, to September, 1918, for war service.

‡ On war service.

NEWTON WIEST, M.D., Professor of Dermatology, Emeritus.

†CLOUGH T. BURNETT, M.D., *Boulder*, Professor of Bacteriology, and Head of Department.

LEONARD FREEMAN, B.S., A.M., M.D., *Denver*, Professor of Surgery, and Head of Department.

CARBON GILLASPIE, M.D., *Boulder*, Professor of Anatomy, and Head of Department.

*CLARENCE B. INGRAHAM, Ph.B., M.D., *Denver*, Professor of Obstetrics and Gynecology, and Head of Department.

EDWARD JACKSON, A.M., M.D., Sc.D., *Denver*, Professor of Ophthalmology, and Head of Department.

ROBERT LEVY, M.D., *Denver*, Professor of Oto-laryngology, and Head of Department.

ROBERT C. LEWIS, Ph.D., *Boulder*, Acting Director of Henry S. Denison Research Laboratory; Professor of Physiology and Biochemistry, and Head of Department.

CHARLES B. LYMAN, M.D., *Denver*, Professor of Clinical Surgery, and Head of Department.

*ARTHUR J. MARKLEY, D.D.S., M.D., *Denver*, Professor of Dermatology and Syphilis, and Head of Department.

GEORGE E. NEUHAUS, M.D., *Denver*, Professor of Neurology and Psychiatry, and Head of Department.

‡ALVIN R. PEEBLES, M.D., *Boulder*, Director of the Henry S. Denison Research Laboratory; Professor of Preventive and Experimental Medicine, and Head of Department.

JAMES C. TODD, Ph.B., M.D., *Boulder*, Professor of Clinical Pathology, and Head of Department.

WILLIAM C. BANE, M.D., *Denver*, Associate Professor of Oto-laryngology.

MELVILLE BLACK, M.D., *Denver*, Associate Professor of Ophthalmology.

SAMUEL B. CHILDS, A.B., M.D., *Denver*, Associate Professor of Roentgenology.

FRANK P. GENGEBACH, M.D., *Denver*, Associate Professor of Pediatrics.

§OSCAR M. GILBERT, M.D., *Boulder*, Associate Professor of Medicine.

* On leave of absence for war service.

† On leave of absence, February, 1918, to February, 1919, for war service.

‡ Died October 22, 1917.

§ On leave of absence, first semester, 1917-1918, for war service.

- *JOSIAH N. HALL, B.S., M.D., *Denver*, Associate Professor of Medicine.
- *SAMUEL FOSDICK JONES, M.D., *Denver*, Associate Professor of Orthopedic Surgery.
- MOSES KLEINER, M.D., *Denver*, Associate Professor of Therapeutics.
- *OLIVER LYONS, M.D., *Denver*, Associate Professor of Genito-Urinary Surgery.
- HOWELL T. PERSHING, M.S., M.D., LL.D., *Denver*, Associate Professor of Psychiatry.
- RUDOLPH W. ARNDT, M.D., *Denver*, Assistant Professor of Medicine.
- FROST C. BUCHTEL, M.D., *Denver*, Assistant Professor of Surgery.
- †GEORGE H. CATTERMOLLE, M.D., *Denver*, Assistant Professor of Pediatrics.
- CLAUDE EDWARD COOPER, A.B., M.D., *Denver*, Assistant Professor of Oto-laryngology.
- *EDWARD F. DEAN, M.D., *Denver*, Assistant Professor of Clinical Surgery.
- EDWARD DELEHANTY, M.D., *Denver*, Assistant Professor of Neurology.
- CHARLES M. GRUBER, Ph.D., *Boulder*, Assistant Professor of Physiology and Pharmacology.
- GEORGE A. MOLEEN, M.D., *Denver*, Assistant Professor of Neurology.
- AUBREY H. WILLIAMS, M.D., *Denver*, Assistant Professor of Clinical Surgery.
- ARTHUR H. EARLEY, M.D., *Denver*, Lecturer on Rectal Surgery.
- JAMES H. PERSHING, A.B., *Denver*, Lecturer on Medical Jurisprudence.
- HENRY SEWALL, Ph.D., M.D., Sc.D., *Denver*, Lecturer on Medicine.
- JOHN MURRAY BARNEY, M.D., *Denver*, Instructor in Medicine.
- HARRY R. BAUM, M.D., *Denver*, Instructor in Oto-laryngology.
- FOSTER H. CARY, M.D., *Denver*, Instructor in Obstetrics.
- *PHILLIPS M. CHASE, M.D., *Denver*, Instructor in Obstetrics.
- WILLIAM H. CRISP, M.D., D.Oph., *Denver*, Instructor in Ophthalmology.
- JOHN B. DAVIS, M.D., *Denver*, Instructor in Genito-Urinary Surgery.
- CHESTER H. ELLIOTT, M.S., M.D., *Denver*, Instructor in Pathology.
- CHARLES A. FERRIS, M.D., *Denver*, Instructor in Obstetrics, Acting Head of Department.
- *WILLIAM C. FINNOFF, M.D., D.Oph., *Denver*, Instructor in Ophthalmology.

* On leave of absence for war service.

† On leave of absence for war service, first semester, 1917-1918.

CLAY E. GIFFIN, A.B., M.D., *Boulder*, Instructor in Surgery.

CASPER F. HEGNER, M.D., *Denver*, Instructor in Surgery.

*WILLIAM WILEY JONES, A.B., M.D., *Denver*, Instructor in Medicine.

*GEORGE P. LINGENFELTER, M.D., *Denver*, Instructor in Dermatology and Syphilis.

TRACY R. LOVE, Ph.B., M.D., *Denver*, Instructor in Dietetics.

JOHN A. MCCAW, M.D., D.Oph., *Denver*, Instructor in Ophthalmology.

HAROLD TUPPER MEAD, M.D., *Boulder*, Instructor in Anatomy.

EDWARD R. MUGRAGE, A.M., M.D., *Denver*, Director of Laboratories for Denver, Instructor in Pathology.

*CYRUS L. PERSHING, B.S., M.D., *Denver*, Instructor in Neurology.

*CUTHBERT POWELL, M.D., *Denver*, Instructor in Gynecology.

*WILLIAM A. SEDWICK, M.D., *Denver*, Instructor in Ophthalmology.

OSCAR M. SHERE, M.D., *Denver*, Instructor in Surgery.

FRANK R. SPENCER, A.B., M.D., *Boulder*, Instructor in Oto-laryngology.

HIRAM R. STILWILL, M.D., *Denver*, Instructor in Ophthalmology.

HENRY WILLIAMS WILCOX, M.D., *Denver*, Instructor in Orthopedic Surgery.

*WILLIAM M. BANE, M.D., *Denver*, Assistant in Oto-laryngology.

E. T. BOYD, M.D., *Denver*, Assistant in Ophthalmology.

FRANK C. KENNELLY, M.D., *Denver*, Assistant in Medicine.

SARA BRANHAM, *Boulder*, Laboratory Assistant in Anatomy and Bacteriology.

LEO COHENOUR, *Denver*, Laboratory Assistant in Pathology.

MAURICE KATZMAN, *Denver*, Laboratory Assistant in Pathology.

INEZ KINNISON, *Boulder*, Laboratory Assistant in Pathology and Physiology.

ICIE MACY, A.B., B.S., *Boulder*, Laboratory and Library Assistant in Biochemistry.

THADEUS P. SEARS, A.B., *Boulder*, Laboratory Assistant in Clinical Pathology.

TEACHING STAFF AT COUNTY HOSPITAL

(On leave of absence for War Service from Hospital and Dispensary: Wm. M. Bane, A. L. Beaghtler, E. F. Dean, B. C. Dorset, W. C. Finnoff, H. G. Garwood, J. N. Hall, C. B. Ingraham, W. A. Jayne, S. F. Jones, W. W. Jones, E. W. Lazell, G. P. Lingenfelter,

* On leave of absence for war service.

L. K. Lunt, O. Lyons, H. G. Macomber, A. J. Markley, A. M. McGugan, R. G. Packard, C. L. Pershing, F. E. Rogers, W. A. Sedwick.)

MEDICINE:

Principals—R. W. Arndt, C. N. Meader, G. K. Olmstead, H. Sewall, A. S. Taussig, C. B. Van Zant.

Associates—J. M. Barney, C. G. Hickey, J. J. Waring.

SURGERY:

Principals—W. B. Craig, E. F. Dean, L. Freeman, C. B. Lyman, J. M. Perkins, A. H. Williams.

Associates—F. C. Buchtel, A. C. Craig, S. B. Eichberg, C. D. McKenzie, O. M. Shere.

TUBERCULOSIS: W. N. Beggs, H. H. Champlin, J. Gelien.

GENITO-URINARY SURGERY: J. B. Davis, O. Lyons, W. M. Spitzer.

ORTHOPEDIC SURGERY: C. G. McEachern, H. W. Wilcox.

OBSTETRICS: F. H. Cary, A. McGugan.

GYNECOLOGY: C. A. Ferris, N. A. Thompson, C. Powell.

PEDIATRICS: J. W. Amessee, G. M. Blickensderfer, F. P. Gengenbach, H. T. Ramsey.

PROCTOLOGY: A. H. Earley.

NEUROLOGY: E. Delehanty, G. A. Moleen, G. E. Neuhaus, S. Goldhammer.

DERMATOLOGY: W. H. Davis, G. P. Lingenfelter, N. Wiest.

OPHTHALMOLOGY: John Chase, D. H. Coover, W. H. Crisp, John McCaw, H. R. Stilwill.

OTO-LARYNGOLOGY: W. C. Bane, H. L. Baum, E. W. Collins, C. E. Cooper, R. Levy.

CONTAGIOUS DISEASES: W. H. Sharpley, L. C. Wollenweber.

ANAESTHETICS: R. L. Charles, K. Roehrig.

RADIOGRAPHY: H. P. Brandenburg, S. B. Childs, L. G. Crosby.

CLINICAL STAFF OF THE UNIVERSITY HOSPITAL, BOULDER

MEDICINE: O. M. Gilbert; SURGERY: C. E. Giffin; OBSTETRICS AND GYNECOLOGY: W. W. Reed; EYE, EAR, NOSE AND THROAT: F. R. Spencer; ANAESTHETIST: M. E. Miles; ROENTGENOLOGIST: C. E. Giffin; BACTERIOLOGIST: C. T. Burnett; BIOCHEMIST: R. C. Lewis; CLINICAL PATHOLOGIST: J. C. Todd; PATHOLOGIST: R. C. Whitman.

CLINICAL STAFF OF THE DISPENSARY

MEDICINE: R. T. Ramsey, Chief; A. L. Beaghler, H. H. Champlin, B. C. Dorset, L. W. Frank, W. W. Jones, F. C. Kennelley, T. R. Love, L. K. Lunt, H. G. Macomber, A. Minnig, J. L. Mortimer, J. J. Waring.

PEDIATRICS: Frank P. Gengenbach, Chief; G. H. Cattermole, B. C. Dorset, F. C. Kennelley, L. C. Wollenweber.

TUBERCULOSIS: J. Gelien, Chief.

SURGERY: O. M. Shere, Chief; A. C. Craig, S. B. Eichberg, H. G. Garwood, C. D. McKenzie, Frank Rogers, N. A. Thompson.

GENITO-URINARY SURGERY: O. Lyons, J. B. Davis.

ORTHOPEDICS: C. G. McEachern, R. G. Packard, C. M. Spicer, H. W. Wilcox.

NEUROLOGY AND PSYCHIATRY: G. E. Neuhaus, Chief; E. Delehanty, G. A. Moleen, C. L. Pershing, C. S. Bluemel.

GYNECOLOGY: W. A. Jayne, Chief; F. H. Cary, C. A. Ferris, M. E. V. Fraser, L. L. Passover, E. W. Perrott.

OBSTETRICAL OUTSERVICE: C. A. Ferris, F. H. Cary, Chiefs; P. M. Chase, A. R. Lannon, G. B. Lewis, H. G. Macomber, J. M. Shapiro, H. W. Stuver, E. W. Perrott.

OPHTHALMOLOGY: H. Aufmwasser, E. T. Boyd, W. H. Crisp, C. O. Eigler, W. C. Finnoff, J. A. McCaw, W. A. Sedwick, H. R. Stilwill.

OTO-LARYNGOLOGY: W. C. Bane, W. M. Bane, H. L. Baum, C. E. Cooper, F. R. Spencer.

DERMATOLOGY AND SYPHILIS: A. J. Markley, Chief; G. P. Lingelfelter.

GENERAL STATEMENT

HISTORICAL NOTE

The University of Colorado School of Medicine was opened in September, 1883. On January 1, 1911, the Denver and Gross College of Medicine was united with this School, the two faculties being combined into one. The single school thus formed is an integral part of the University of Colorado. At the same time the third and fourth-year classes were transferred to Denver, where greatly enlarged clinical facilities are available. The Denver and Gross College of Medicine was the union June 19, 1902, of the Denver College of Medicine, a department of the University of Denver, and the Gross Medical College. The former College was opened November, 1881, and the latter in 1887. The School is a member of the Association of American Medical Colleges.

The first two years constitute the Boulder Division of the School, and the last two years, the Denver Division.

THE HENRY S. DENISON RESEARCH LABORATORIES

The Henry S. Denison Research Laboratories, together with the Denison Memorial Building, are the gift of Mrs. Ella Strong Denison in memory of her son, Dr. Henry S. Denison, who was a member of the Medical Faculty. The west wing of the building is now completed. It contains special rooms and equipment for research and advanced work in chemistry, physiology, pathology, bacteriology, and clinical medicine, together with the necessary accessory rooms, such as library, cold room, incubator room, operating and sterilizing rooms, dark room, etc. To all who have the necessary educational prerequisites, opportunity is here offered for special work and research.

CLINICS

Operative and bedside clinics and clinical conferences are held daily at the Denver City and County Hospital, 400 beds. The Hospital clinics are so arranged that small groups of students have an opportunity to study and observe the cases intimately, under the direction of the proper members of the faculty. The School also maintains a dispensary where daily clinics are attended by small

groups of students in Medicine; Pediatrics; Neurology; Tuberculosis; Surgery; Gynecology; Orthopedics; Eye; Ear, Nose and Throat; Dermatology and Genito-Urinary Surgery; and the Clinical Laboratory. There are more than 20,000 visits yearly to the Dispensary. In addition to these, clinics are held for small groups of students at St. Joseph's Hospital, 200 beds, and the Contagious (Steele) Hospital. Clinical facilities are also provided at the Children's Hospital.

There is abundant material for teaching obstetrics, each member of the senior class being required to attend a minimum of six cases, in addition to seeing cases delivered by members of the faculty. Students who desire to do so may attend a much larger number of cases.

SESSION OF 1918-1919

The next term begins September 9, 1918.

Applicants for admission are urged to see that their entrance credentials are in the hands of the Registrar on or before September 6, 1918, in order that these may be examined and passed upon in advance of registration.

For further information, address the Registrar, Boulder.

REQUIREMENTS FOR ADMISSION

See pages 26, 30.

SPECIAL STUDENTS

See page 30.

ADVANCED STANDING

Candidates from a medical college on the accepted list must present to the Registrar of the University at the time of matriculation satisfactory credentials showing that the entrance requirements as given above, have been complied with, and that all the work in which advanced credit is sought has been completed. Students from schools rated in grade "B" are admitted only after passing examinations.

Applicants for advanced standing who have not attended a medical school during the preceding five years must stand examinations in the subjects in which credit is sought. The School will cooperate in adjusting so far as possible difficulties arising from differences in the arrangement of the curriculum. The responsibility for making these adjustments rests finally, however, with the stu-

dent, who is expected to make satisfactory arrangements with the instructors concerned. See also page 26.

COURSES LEADING TO TWO DEGREES

A seven-year course leading to the degrees of A.B. and M.D. is offered. The student pursues the regular work of the College of Liberal Arts for three years and then begins his medical studies. The A.B. degree is conferred upon the completion of the first year of Medicine.

REQUIREMENTS FOR A DEGREE

Every candidate for the degree of Doctor of Medicine must be twenty-one years of age, possess a good moral character, and be of temperate habits. He must have passed satisfactory examinations in all the required studies included in the full course of instruction. He must have attended regularly four full courses of lectures of not less than thirty-two weeks each, in some accredited medical college. No two of such courses shall have been taken in the same year. The last course must be taken in this School. An allowance for absence will be made for no other cause than the illness of the student or of his immediate family, and such absence from any course must not exceed twenty per centum of the scheduled hours.

FEES

For fees, see pages 33, 35.

DESCRIPTION OF COURSES*

FIRST YEAR (AT BOULDER)

ANATOMY, HISTOLOGY, AND EMBRYOLOGY

Anatomy is taught by means of lectures, recitations, drawings, and demonstrations upon the cadaver. Work in the dissecting room is prosecuted under the personal supervision of the professor and demonstrators of anatomy. Every facility and encouragement is given the student to pursue work in the anatomical room beyond the requirements of the prescribed course. The anatomical material is furnished free.

1. **OSTEOLOGY AND DISSECTION.** Throughout the year. 320 h.

Dissections, including osteology; laboratory exercises, lectures and recitations.

Professor Gillaspie and Doctor Mead.

2. **ANATOMY OF THE CENTRAL NERVOUS SYSTEM.** Second semester. 112 h.

Dissection of the brain and cord, and study of fiber tracts from dissections, charts, and microscopic preparations.

Professor Gillaspie.

3. **HISTOLOGY.** First semester. 190 h.

Lectures, recitations, and laboratory exercises.

Microscopic anatomy of the various tissues and organs.

Professor Gillaspie and Doctor Mead.

4. **EMBRYOLOGY.** First semester. 114 h.

Laboratory exercises, lectures and recitations on the development of the human body, and foetal anatomy.

Professor Gillaspie and Doctor Mead.

CHEMISTRY

1. **ORGANIC CHEMISTRY.**† Second semester. 112 h.

Lectures, accompanied by laboratory exercises in which the student acquires a first hand acquaintance with the compounds discussed in the lectures.

Professor Ekeley and Assistants.

* The hours indicated after each course show the total time devoted to the course.

† Beginning with the class entering in 1919, this course will be required for admission.

BACTERIOLOGY

1. GENERAL BACTERIOLOGY. Second semester. 144 h.

Lectures, recitations, and laboratory work on the chemistry and biology of bacteria, classification, methods of isolation, culture and staining; phenomena of infection, and cultural characteristics of the pathogenic organisms. Some time is also devoted to the methods of water and milk analysis, and the identification of cultures.

Professor Burnett and Assistant.

PHYSIOLOGY

1. PHYSIOLOGY. Second semester. 112 h.

Lectures and recitations on general and cell physiology, the physiology of nerve and muscle, blood and lymph, circulation, respiration, digestion, absorption, and excretion.

Assistant Professor Gruber.

2. PHYSIOLOGY. Second semester. 192 h.

Laboratory exercises and demonstrations in experimental physiology. Muscle-nerve preparations, circulation, respiration, special senses, internal secretions, hormones, etc.

Assistant Professor Gruber.

SECOND YEAR (AT BOULDER)

ANATOMY

1. APPLIED ANATOMY. Second semester. 128 h.

The student is expected to review the histology and the embryology as well as the gross anatomy of the body and thus be better prepared to apply his knowledge in the study of pathology and surgery.

Professor Gillaspie.

2. ANATOMY OF THE CENTRAL NERVOUS SYSTEM AND SPECIAL SENSE ORGANS. Second semester. 48 h.

Lectures and dissections.

An elective course primarily designed for students of psychology.

Professor Gillaspie.

PHYSIOLOGY

1. **PHYSIOLOGY.** First semester. 32 h.

Lectures and recitations on the physiology of metabolism, nutrition, heat production and regulation, ductless glands, and reproduction.

Professor Lewis.

2. **BIOCHEMISTRY.** First semester. 224 h.

Lectures, recitations, and laboratory exercises on the chemistry of carbohydrates, fats and proteins; of salivary, gastric, pancreatic and intestinal digestion; of bile, putrefaction products, feces; of epithelial, connective, muscular and nervous tissues; of blood, milk, and urine. Considerable time is devoted to practical qualitative and quantitative methods of analysis of urine, milk, stomach contents, and blood, and to practical work in metabolism.

Professor Lewis and Assistant.

PATHOLOGY

1. **GENERAL PATHOLOGY.** Throughout the year. 96 h.

Lectures and recitations on the causes, nature, and course of disease processes.

Professor Whitman.

2. **LABORATORY COURSE.** Second semester. 128 h.

Study of the pathologic histology of disturbances of circulation, the degenerations, inflammation, tissue regeneration, the specific infections, tumors, etc.

Professor Whitman.

HYGIENE

1. **HYGIENE AND PREVENTIVE MEDICINE.** Throughout the year. 64 h.

Recitations based on a standard text on public and personal hygiene, epidemiology, and preventive medicine.

Professor Whitman.

BACTERIOLOGY

1. **ADVANCED BACTERIOLOGY.** Second semester. Hours as arranged.

An optional course, open to a limited number.

Practice in bacteriologic examination of water, milk, food, soil, air; determination of vital resistance, efficiency of antiseptics; methods of bacteriologic diagnosis of typhoid fever, diph-

theria, tuberculosis, etc. To such students as are qualified, special problems are assigned for investigation.

Professor Burnett.

PHARMACOLOGY

1. PHARMACOLOGY, MATERIA MEDICA, AND TOXICOLOGY. First semester. 160 h.

Lectures, recitations and laboratory experiments on the physiologic action, toxicology, and therapeutics of important drugs.

Assistant Professor Gruber.

CLINICAL PATHOLOGY

1. CLINICAL PATHOLOGY. Second semester. 128 h.

Recitations and laboratory drill on technique and interpretation of the results of clinical examination of sputum, blood, urine, stomach contents, feces, and pathologic secretions and excretions.

Professor Todd.

MEDICINE

1. PRINCIPLES OF MEDICINE. Second semester. 16 h.

Lectures on the nature of disease processes, the fundamental principles of differential diagnosis, and methods of physical examination.

Associate Professor Gilbert.

2. PHYSICAL DIAGNOSIS. Second semester. 64 h.

Clinics and clinical exercises concerned primarily with the demonstration and interpretation of physical signs.

Associate Professor Gilbert.

SURGERY

1. PRINCIPLES OF SURGERY. Second semester. 32 h.

Lectures and recitations on wounds and healing of wounds, infection, inflammation, necrosis, surgical tuberculosis, bandaging, etc.

Doctor Giffin.

2. BANDAGING. Second semester. 32 h.

Practical instruction in the application of bandages.

Doctor Giffin.

*THIRD YEAR (AT DENVER)***MEDICINE AND THERAPEUTICS**

1. **THEORY AND PRACTICE.** Throughout the year. 160 h.
Lectures, recitations and reports covering the subject of internal medicine.
Professor Meader, Doctor Sewall and Doctor Waring.
2. **CLINICAL MEDICINE.** Throughout the year. 32 h.
A series of clinics at the County Hospital upon patients from the medical wards.
The Medical Staff.
3. **PEDIATRICS.** First semester. 32 h.
Lectures and recitations on infant feeding and the important diseases of childhood.
Associate Professor Gengenbach.
4. **CLINICAL THERAPEUTICS.** Second semester. 32 h.
Lectures and recitations on the application of the principles of pharmacology to specific therapeutic problems.
Associate Professor Kleiner.
5. **PHYSICAL DIAGNOSIS.** First or second semester. 40 h.
Clinical exercises with small groups of students on the recognition and interpretation of abnormal signs.
Doctors Barney and Kennelly.
6. **PATHOLOGICAL PHYSIOLOGY.** First semester. 16 h.
Lectures on perverted action and function of diseased organs.
Emeritus Professor Van Zant.
7. **ROENTGENOLOGY.** Second semester. 16 h.
Lectures and demonstrations on the diagnostic and therapeutic use of the X-Ray and on the interpretation of skiagrams.
Associate Professor Childs.
8. **CASE TAKING.** Second semester. 32 h.
Practical history taking by small groups of students in the Dispensary.
The Dispensary Staff.

NEUROLOGY

1. **PRINCIPLES OF NEUROLOGY.** First semester. 32 h.
Lectures reviewing the anatomy and physiology of the central nervous system, its symptomatology, and neurologic methods.
Assistant Professor Moleen and Doctor Pershing.

2. **NEUROLOGIC DIAGNOSIS.** First or second semester. 40 h.

Practical exercises for small groups of students in history taking, and physical examination of neurologic patients, and the physiological interpretation of neurologic signs and symptoms. Instruction is also given in the diagnostic and therapeutic use of electricity.

Doctor Pershing.

3. **PATHOLOGICAL PSYCHOLOGY.** Second semester. 16 h.

Lectures on the fundamental laws of psychology as applied to the relation of physician and patient, and to diseased states, psychanalysis, etc.

Professor Neuhaus.

SURGERY

1. **MINOR SURGERY.** Throughout the year. 48 h.

Lectures on the surgery of the bones and joints, and the minor surgical operations.

Assistant Professor Dean and Doctor Shere.

2. **SURGICAL PATHOLOGY.** Lectures and laboratory. 32 h.

Doctor Shere and Doctor Hegner.

3. **ORTHOPEDICS.** Second semester. 16 h.

Clinical lectures on the more important orthopedic conditions.

Doctor Wilcox.

4. **GENITO-URINARY SURGERY.** First semester. 32 h.

Lectures.

Associate Professor Lyons.

5. **CLINICAL SURGERY.** Throughout the year. 32 h.

A series of clinics at the County Hospital on patients from the surgical wards.

The Surgical Staff.

GYNECOLOGY AND OBSTETRICS

1. **GYNECOLOGY.** First semester. 32 h.

Lectures.

Doctor Fraser.

2. **NORMAL OBSTETRICS.** First semester. 48 h.

Lectures on the physiology, diagnosis, and management of normal pregnancy, labor, and the puerperium.

Doctor Cary.

3. **PATHOLOGICAL OBSTETRICS.** Second semester. 32 h.

Lectures on the pathology, diagnosis, and treatment of the complications of pregnancy.

Doctor Ferris and Doctor Cary.

4. **MANIKIN COURSE.** First or second semester. 32 h.

The class is divided into small groups for practical exercises on the manikin, and practice in gynecological and obstetrical diagnosis, accompanied by lectures and recitations.

Doctor Ferris.

OPHTHALMOLOGY

1. **OPHTHALMOLOGY.** Second semester. 32 h.

Lectures and recitations on errors of refraction and ocular movements, and the common injuries and diseases of the eye.

Professor Jackson.

2. **DEMONSTRATION.** First or second semester. 11 h.

Demonstrations to small sections of the class on methods of diagnosis, ophthalmoscopy, etc., with lectures and recitations on normal optics.

Professor Jackson and Assistants.

OTO-LARYNGOLOGY

1. **OTO-LARYNGOLOGY.** Second semester. 32 h.

Lectures on diseases of the ear, nose, and throat.

Professor Levy.

2. **DEMONSTRATIONS.** First or second semester. 21 h.

The class is divided into small groups for lectures and quizzes on the anatomy and physiology of the ear, nose, and throat, and for practical diagnostic exercises in the use of the otoscope, laryngoscope, rhinoscope, etc.

Professor Levy and Assistants.

DERMATOLOGY

1. **DERMATOLOGY.** Second semester. 32 h.

Lectures on the commoner diseases of the skin.

Emeritus Professors Davis and Wiest.

PATHOLOGY

1. **SPECIAL PATHOLOGY.** Throughout the year. 64 h.

Lectures and laboratory demonstrations on pathological

conditions and disease processes of the more important organs and organ systems.

Doctor Elliott.

2. IMMUNITY AND SPECIAL PATHOLOGY. Throughout the year. 64 h.

Lectures, recitations, and laboratory demonstrations on the phenomena of immunity, and their application to diagnosis and treatment. The course also includes practical laboratory exercises on tumor diagnosis.

Doctor Mugrage.

MEDICAL JURISPRUDENCE

1. LECTURES. First semester. 32 h.

Mr. James H. Pershing.

FOURTH YEAR (AT DENVER)

CLINICAL INSTRUCTION

Clinical instruction is given in three forms, namely, amphitheater clinics, clinical clerkships, and dispensary clinics. Students are given every facility compatible with the welfare of the patient, for direct personal examination of the patient.

GENERAL CLINICS are held from 8:00 to 9:00 at the County Hospital, as follows:

	Hours per Year.
Medicine	48
Surgery	48
Neurology and Psychiatry	32
Pediatrics	32

The hours from 9:00 to 11:00 A. M. and after 3:00 P. M. are assigned to Clinical Clerkships. In this capacity the students are apportioned among the various departments of the County Hospital and carry on their studies of patients under the direct supervision of members of the Visiting Staff.

The hours spent in each department are approximately as follows:

	Hours.		Hours.
Medicine	96	Ear, Nose, and Throat.....	19
Surgery	96	Gross Pathology	26
Neurology and Psychiatry...	48	Pediatrics	32
Orthopedics	32	Contagious Diseases	19
Genito-Urinary Diseases	19	Ophthalmology	19
Dermatology	19	Tuberculosis	32
		Obstetrics	48

OBSTETRICS. Each student is required to personally attend a minimum of six cases, and may, if he desires, attend a much larger number.

DISPENSARY CLINICS are conducted in the following departments: Medicine; Pediatrics; Surgery; Neurology; Gynecology; Eye; Ear, Nose and Throat; Dermatology and Genito-Urinary Surgery; Tuberculosis and the Clinical Laboratory. The clinics are organized in such a manner as to teach methods of office practice. The class is divided into nine sections. Each section spends one and one-half hours daily for three and one-half weeks in each of the above departments. Selected cases are assigned by the staff to each student for history taking, examination, diagnosis, and treatment, so far as the last may be properly carried out by the student.

The didactic teaching of the fourth year is as follows:

MEDICINE

1. CASE TEACHING. Throughout the year. 32 h.
Associate Professor Gilbert.
2. CASE TEACHING IN PEDIATRICS. Second semester. 16 h.
Assistant Professor Cattermole.
3. DIETETICS. First semester. 16 h.

Lectures on physiological and pathological metabolism, with special reference to specific pathological conditions.

Doctor Love.

NEUROLOGY AND PSYCHIATRY

1. NEUROLOGY AND PSYCHIATRY. Throughout the year. 64 h.

Lectures on psychiatry, the psycho-neuroses, and the principles of psycho-therapy; and the organic diseases of the peripheral nerves, spinal cord, and brain.

Associate Professor Pershing and Assistant Professor Delehanty.

SURGERY

1. LECTURES. Throughout the year. 96 h.

Tumors and injuries of the abdomen, surgery of the breast, amputations, surgery of the intestines, liver, spleen, and pancreas, and surgery of the head, neck, and rectum.

Professors Freeman and Lyman and Asst. Professor Buchtel.

SUMMARY OF COURSES FOR 1917-1918

FIRST YEAR:	Lect.	Lab.	Clin.	Tot.
Anatomy	96	336	..	432
Histology and Embryology....	64	240	..	304
Organic Chemistry	64	48	..	112
Physiology	112	192	..	304
Bacteriology	40	104	..	144
	<hr/> 376	<hr/> 920	<hr/> ..	<hr/> 1,296

SECOND YEAR:

Anatomy	32	96	..	128
Physiology	32	..	..	32
Biochemistry	80	144	..	224
Pathology	96	128	..	224
Hygiene	64	..	..	64
Pharmacology	64	96	..	160
Surgery	32	..	32	64
Medicine	16	..	64	80
Clinical Pathology	32	96	..	128
	<hr/> 448	<hr/> 560	<hr/> 96	<hr/> 1,104

THIRD YEAR:	Lect.	Lab.	Clin.	Tot.
Dermatology	32	..	..	32
Eye, Ear, Nose and Throat....	64	..	32	96
Genito-Urinary Diseases	32	..	..	32
Gynecology	32	..	..	32
Medical Jurisprudence	32	..	..	32
Medicine	176	..	112	288
Neurology	48	..	40	88
*Obstetrics	80	..	32	112
Orthopedics	16	..	..	16
Pathology	64	64	..	128
Pediatrics	32	..	..	32
Roentgenology	16	..	..	16
Surgery	48	..	64	112
Therapeutics	32	..	..	32
	<hr/> 704	<hr/> 64	<hr/> 280	<hr/> 1,048

* Does not include time spent in personal conduct of out-patient cases.

FOURTH YEAR:

Dermatology .....	..	..	38	38
Dietetics	16	..	..	16
Ear, Nose and Throat.....	..	..	51	51
Genito-Urinary Diseases .....	..	..	38	38
Gynecology .....	..	..	26	26
Medicine	32	..	221	253
Neurology and Psychiatry....	64	..	106	170
*Obstetrics .....	..	..	48	48
Ophthalmology .....	..	..	51	51
Orthopedics .....	..	..	46	46
Pathology .....	..	..	26	26
Pediatrics	16	..	64	80
Surgery	96	..	170	266
	<u>224</u>	<u>..</u>	<u>885</u>	<u>1,109</u>

RECAPITULATION:

First year	376	920	..	1,296
Second year	448	560	96	1,104
Third year	704	64	280	1,048
Fourth year	224	..	885	1,109
	<u>1,752</u>	<u>1,544</u>	<u>1,261</u>	<u>4,557</u>

* Does not include time spent in personal conduct of out-patient cases.

UNIVERSITY OF COLORADO HOSPITAL

GENERAL STATEMENT

The University Hospital is situated on ground adjacent to the main campus. It is thoroughly equipped and has recently been enlarged by the addition of quarters for the isolation of cases of infectious disease, by a new wing for convalescent patients and for the open air treatment of disease, by a maternity room and a nursery. In the wards and private rooms there are accommodations for seventy-five patients.

Private patients may employ any reputable physician whom they may elect.

The Hospital is used in caring for students of the University and has been found of great advantage to them when in need of hospital care when away from home.

The Nurses' Home is a frame cottage situated on the Hospital grounds.

HOSPITAL FEES

General wards, \$12 to \$14 a week; private rooms, \$15 to \$25 a week; operating room fee, \$5 to \$15; maternity room and nursery, no extra charge; special nurse, \$25 a week; medicine and dressings at cost.

HOSPITAL BOARD

WALTER W. REED, M.D.

GEORGE H. CATTERMOLLE, M.D.

FRANK R. SPENCER, M.D., Secretary

OSCAR M. GILBERT, M.D.

FRANK H. WOLCOTT

HOSPITAL STAFF

WALTER W. REED, M.D., Superintendent.

MRS. CORA L. CHAMBERLAIN, R.N., Superintendent of Nurses.

AGNES GJELLUM, R.N., Night Supervisor.

JOHN BOUSLOG, A.B., M.D., Externe.

MRS. LUCINDA MARTIN, R.N., Surgical Supervisor.

JAMES C. TODD, M.D., Director of Laboratory.

UNIVERSITY OF COLORADO TRAINING SCHOOL FOR NURSES

FACULTY

*LIVINGSTON FARRAND, A.M., M.D., LL.D., President of the University.

CORA L. CHAMBERLAIN, R.N., Superintendent of Nurses, Ethics of Nursing, Practical Nursing, and Hospital Economics.

JACOB CAMPBELL, M.D., Surgery, Surgical Nursing.

GEORGE H. CATTERMOLLE, M.D., Diseases of Children, Infant Feeding, Children's Nursing.

OSCAR M. GILBERT, M.D., Medical Nursing and Hygiene.

E. BARBER QUEAL, M.D., Physiology.

CARSON GILLASPIE, M.D., Anatomy, Histology.

WALTER W. REED, M.D., Gynecology, Obstetric Nursing.

†HOMER C. WASHBURN, Ph.C., B.S. (Phar.), Materia Medica.

CLOUGH T. BURNETT, M.D., Bacteriology and Contagious Diseases.

LUCINDA MARTIN, R.N., Practical Nursing, Surgical and Operating Room Technique.

FRANK R. SPENCER, M.D., Eye, Ear, Nose and Throat Nursing.

W. WALTER WASSON, M.D., Urinalysis.

MARTIN E. MILES, M.D., Medical Nursing.

†WILLIAM A. JOLLEY, M.D., Major C. N. G., Red Cross and Military Nursing.

GENERAL STATEMENT

The University of Colorado School for Nurses, which has been in successful operation since 1898, offers a thorough course of training to young women who desire to enter the profession of nursing. The course of instruction comprises: practical work in the wards, operating room, maternity room, nursery, laboratories, and diet kitchen; theoretical work in class; lectures, and demonstrations; dietetics; massage; and training school administration.

For admission, a certificate of moral character must be presented from two reliable persons, and a certificate of health from a physician. Evidence of four years' work in a high school, or equivalent, is required. The applicant must not be less than nineteen or

* On leave of absence, June, 1917, to September, 1918, for war service.

† On leave of absence for war service.

more than thirty years of age. Applicants may be admitted at any time when a vacancy exists.

The applicant is received on probation for three months. During this period she receives room, board, and a reasonable amount of laundry service. Upon the completion of the probationary period, if her work has been satisfactory to the Superintendent of Nurses, she is retained as a pupil. Pupils receive \$8.00 per month. This sum is allowed for the uniform, textbooks, and other incidentals, but is not intended as wages. It is considered that the education given fully compensates for services. An annual vacation of two weeks is allowed each pupil.

Lectures begin in September and continue until June. There is the usual intermission in lectures at Christmas.

Every applicant for graduation must have completed the required practical courses, and have passed satisfactory examinations in all the required studies, and have been a regular member of the Training School for three years. For additional information, address the Superintendent of Nurses, University Hospital, Boulder, Colorado.

REQUIREMENTS FOR GRADUATION

FIRST YEAR

FIRST SEMESTER		SECOND SEMESTER	
Practical Nursing and Ethics of		Practical Nursing and Ethics of	
Nursing	*18	Nursing	18
Anatomy	18	Anatomy	18
Physiology and Hygiene	18	Physiology and Hygiene	18
Dietetics and Cooking	18	Materia Medica	18

SECOND YEAR

FIRST SEMESTER		SECOND SEMESTER	
Obstetrics	18	Obstetrics	18
Surgical Nursing	18	Surgery	18
Medical Nursing	18	Medical Nursing	18
Pediatrics	18	Urinalysis	6
		Eye, Ear, Nose, and Throat	8

THIRD YEAR

FIRST SEMESTER		SECOND SEMESTER	
Bacteriology	18	Advanced Anatomy	18
Gynecology	18	Nervous and Mental Diseases	3
Contagious Diseases	4	Anaesthesia	—

* The hours indicated after each course show the total time devoted to the course.

SCHOOL OF LAW

FACULTY AND LECTURERS

FACULTY

- *LIVINGSTON FARRAND, A.M., M.D., LL.D., President of the University.
GEORGE NORLIN, Ph.D., Acting President of the University.
JOHN D. FLEMING, A.B., LL.B., LL.D., Dean; Charles Inglis Thomson Professor of Law.
JOHN CAMPBELL, A.M., LL.B., LL.D., Dean, Emeritus.
ALBERT A. REED, LL.B., Professor of Law, Emeritus.
†FRED G. FOLSOM, A.B., LL.B., Professor of Law.
WILLIAM R. ARTHUR, A.B., LL.B., Professor of Law.
HERBERT S. HADLEY, A.B., LL.B., LL.D., Professor of Law.
EDWIN W. PATTERSON, A.B., LL.B., Assistant Professor of Law.
‡RICHARD B. SCANDRETT, JR., A.B., LL.B., Acting Instructor in Law.

LECTURERS

- ROBERT S. MORRISON, Lecturer on Law of Mines and Mining.
†WILLARD J. WHITE, A.M., M.D., Lecturer on Medical Jurisprudence.
JAMES W. MCCREERY, Lecturer on Law of Irrigation and Water Rights.
JOHN E. ROBINSON, Lecturer on Bankruptcy.
HARRY S. SILVERSTEIN, A.B., Lecturer on Criminal Procedure.
HENRY E. LUTZ, LL.B., Lecturer on Equity Pleading and Practice.
LYMAN P. WELD, LL.B., Lecturer on Conveyancing and Abstracts.
JOHN H. FRY, LL.B., Lecturer on Auxiliary Code Remedies.
HAROLD P. MARTIN, Ph.B., LL.B., Lecturer on Colorado Code of Civil Procedure.
EDWIN J. INGRAM, A.B., LL.B., Lecturer on Practice and Procedure, and Judge of the Practice Court.

* On leave of absence, June, 1917, to September, 1918, for war service.

† On leave of absence for war service.

‡ Resigned January 28, 1918, for war service.

GENERAL STATEMENT

HISTORY

The School of Law was organized in 1892. The course of study occupied two years until 1898 when it was increased to three years. In 1912 the entrance requirements were advanced to include two years of college work in addition to the high-school education previously prescribed. It has been a member of the Association of American Law Schools since the first annual meeting of the Association in 1901.

BUILDING

The Simon Guggenheim Law Building, erected in 1909, contains lecture and classrooms, professors' rooms, moot and practice court rooms, and rooms for the library. It is the gift of Honorable Simon Guggenheim, formerly United States Senator from Colorado.

THE CHARLES INGLIS THOMSON PROFESSORSHIP

Mrs. Olivia Thomson, lately deceased, has given by will for use of the School of Law the sum of \$75,000, the proceeds of which are used to support, in memory of her husband, a professorship known as "The Charles Inglis Thomson Professorship of Law."

THE LIBRARY

The University Library is open to students of all departments.

The Law Library contains 8,761 volumes embracing many sets of state reports, the National Reporter System, all the reports of the Annotated Series, the digests, including the Century, all the encyclopedias, many original English Reports, the English Reports Full Reprint, digests, and statutes, U. S. departmental reports, and a carefully selected collection of textbooks, and is increased each year under special appropriations by the Regents. Most of the leading law journals, American and English, are regularly taken and are on file. The Law Library is under the supervision of an experienced librarian and assistant, and is open to the students from 8:00 A.M. to 10:00 P.M. on week days.

An accession of one thousand volumes, chiefly reports, from the library of the late Judge C. I. Thomson, the gift of his widow, has been lately made. The volumes are known and catalogued as the "C. I. Thomson Collection."

REQUIREMENTS FOR ADMISSION

See pages 26, 30.

ADVANCED STANDING

Students if otherwise entitled to admission as regular students will be admitted to advanced standing in the second or third year only upon presentation of satisfactory certificates of the completion of equivalent subjects in another law school of equal rank. Such applicants may also in the discretion of the faculty be required to undergo an examination in any or all subjects of the first or second year.

SPECIAL STUDENTS

See page 30.

FEES

For fees, see pages 33, 35.

DEGREE OF BACHELOR OF LAWS

The degree Bachelor of Laws will be conferred on students who have met the entrance requirements for candidates for the degree and who have satisfactorily completed the three-year curriculum in accordance with the regulations established by the faculty. The time allowance may be proportionally reduced for those who enter with advanced standing, but the candidate for a degree must have pursued at least one year's course as a resident student. No degree will be conferred until the candidate shall have reached the age of twenty-one years.

METHOD OF INSTRUCTION

What is known as the Case-system, or the study of the principles of law as illustrated in judicial opinion, is followed with the view of arriving at such principles by the process of inductive reasoning.

TEACHING PRACTICE

As thorough a course as circumstances will allow in court practice and procedure is deemed an essential part of the curriculum. To supply a knowledge of this, a Practice Court has been provided in which the records and files are kept and the proceedings conducted in conformity with the usage and practice in the courts of Colorado.

It is intended that each student shall participate in the conduct to final judgment of at least two cases in each of the second and third years of his course.

INSTRUCTION IN OTHER DEPARTMENTS OF THE UNIVERSITY

The instruction given in other departments of the University is open also to students of the School of Law, subject to the approval of the Law Faculty. Among the numerous courses, those upon Political Science and Economics, Geology, Mineralogy, History, Oratory and Debate, are particularly recommended for law students. Students intending to take up the study of law are advised to consult with the Dean in regard to their pre-legal courses.

PRIZES

The American Law Book Company of New York City gives annually a prize of a complete set of "Cyc" with its Annual Annotations to the student of the third-year class who attains the highest scholarship honors for the period of his senior year.

Callaghan and Company, Law Publishers, Chicago, give annually a prize of The Cyclopedic Law Dictionary, one volume, to the student of the second-year class who attains the best general average in his studies for the year.

COURSE OF STUDY

It is the purpose of the School to afford such training in the fundamental principles of the English and American law as will thoroughly prepare the student to practice his profession with credit in any state or country where this law prevails.

Every candidate for the degree Bachelor of Laws is required to take all the subjects of the first year, at least thirteen hours a week in each semester of the second year, and at least thirteen hours a week in each semester of the third year. The work of the second and third years must include all subjects preceded by a star in the outline of studies below.

Third-year Property is open as an elective to only such students as have attained an average of 80 per cent in their preceding Property courses.

In addition to the above, all students are required to take the Practice Court work, and such special lectures as are provided.

FIRST YEAR

FIRST SEMESTER

ELEMENTARY LAW. 2 h.

Robinson's Elementary Law (Rev. ed. 1910).

Mr. Scandrett.

CONTRACTS. 3 h.

Williston's Cases on Contracts, Vols. I and II (1904 ed.).

Professor Arthur.

CRIMINAL LAW AND PROCEDURE. 4 h.

Beale's Cases on Criminal Law (3d ed.).

Professor Hadley.

PROPERTY. 3 h.

Gray's Cases on Property, Vol I (2d ed.).

Professor Arthur.

COMMON LAW PLEADING. 2 h.

Ames' Cases on Pleading (2d ed.); Whittier's Cases on Common Law Pleading.

Assistant Professor Patterson.

SECOND SEMESTER

COMMON LAW PLEADING. (CONTINUED.) 2 h.

Assistant Professor Patterson.

TORTS. 4 h.

Ames and Smith's Cases on Torts (1909-10 ed.).

Professor Arthur.

CONTRACTS. (CONTINUED.) 3 h.

Professor Arthur.

PROPERTY. 3 h.

Gray's Cases on Property, Vol. II (2d ed.).

Professor Arthur.

AGENCY. 2 h.

Huffcut's Cases on Agency (2d ed.).

Assistant Professor Patterson.

SECOND YEAR

FIRST SEMESTER

*EQUITY JURISDICTION. 4 h.

Ames' Cases on Equity, Vol. I.

Assistant Professor Patterson.

*CIVIL PROCEDURE UNDER THE CODE. 2 h.

Colorado Code of Procedure and Selected Cases.

Mr. Martin.

DOMESTIC RELATIONS. 2 h.

Woodruff's Cases on Domestic Relations (2d ed.).

(Omitted, 1917-1918.)

PARTNERSHIP. 3 h.

Burdick's Cases on Partnership.

Mr. Scandrett.

*PROPERTY. 3 h.

Gray's Cases on Property, Vol. III (2d ed.).

Professor Arthur.

SALES. 3 h.

Williston's Cases on Sales (2d ed.).

Professor Arthur.

SECOND SEMESTER

***EVIDENCE. 4 h.**

Thayer's Cases on Evidence (2d. ed.).

Assistant Professor Patterson.

CARRIERS. 2 h.

Beale's Cases on Carriers (2d ed.).

(Omitted, 1917-1918.)

***BILLS AND NOTES. 3 h.**

Smith and Moore's Cases on Bills and Notes.

(Omitted, 1917-1918.)

DAMAGES. 2 h.

Beale's Cases on Damages (2d ed.).

(Omitted, 1917-1918.)

***PROPERTY. (WILLS.) 3 h.**

Costigan's Cases on Wills.

Professor Arthur.

INSURANCE. 1 h.

Richards' Cases on Insurance.

Professor Fleming.

THIRD YEAR

FIRST SEMESTER

TRUSTS. 2 h.

Ames' Cases on Trusts (2d ed.).

Assistant Professor Patterson.

***PRIVATE CORPORATIONS. 4 h.**

Warren's Cases on Private Corporations (2d ed.).

Professor Hadley.

PROPERTY. 3 h.

Gray's Cases on Property, Vol. V (2d ed.).

Professor Arthur.

***MINES AND MINING. 3 h.**

Costigan's Cases on Mining Law.

Professor Fleming.

***CONSTITUTIONAL LAW. 5 h.**

Hall's Cases on Constitutional Law.

Professor Fleming.

PLEADING AND PRACTICE UNDER THE CODE. 2 h.

This course covers the work in the Practice Court described
above.

Mr. Ingram.

SECOND SEMESTER

PUBLIC UTILITIES. 2 h.

Wyman's Cases on Public Service Companies (2d ed.).

Professor Hadley.

*APPELLATE PRACTICE. 1 h.

Lectures and Selected Cases.

Mr. Scandrett.

MUNICIPAL CORPORATIONS. 2 h.

Beale's Cases on Municipal Corporations.

Professor Hadley.

SURETYSHIP AND GUARANTY. 2 h.

Ames' Cases on Suretyship.

(Omitted, 1917-1918.)

PROPERTY. 3 h.

Gray's Cases on Property, Vol. VI (2d ed.).

Professor Arthur.

*IRRIGATION AND WATER RIGHTS. 2 h.

Bingham's Cases on Water Rights; Selected Cases from Arid States.

Professor Fleming.

*CONFLICT OF LAWS. 3 h.

Beale's Shorter Selection of Cases on Conflict of Laws.

Professor Fleming.

*STATUTES. 1 h.

A textual and comparative study of some important Colorado Statutes.

Professor Fleming.

CONVEYANCING AND ABSTRACTS OF TITLE. 1 h.

Drafting exercises, study of selected abstracts, and title searching.

Mr. Weld.

PLEADING AND PRACTICE UNDER THE CODE. (CONTINUED.) 2 h.

Mr. Ingram.

COLLEGE OF PHARMACY

FACULTY

*LIVINGSTON FARRAND, A.M., M.D., LL.D., President of the University.

GEORGE NORLIN, Ph.D., Acting President of the University.

†HOMER C. WASHBURN, Ph.C., B.S. (Phar.), Dean; Professor of Pharmacy.

FRANCIS RAMALEY, Ph.D., Acting Dean; Professor of Botany.

JOHN BERNARD EKELEY, Ph.D., Sc.D., Professor of Chemistry.

OLIVER C. LESTER, Ph.D., Professor of Physics.

‡CLOUGH T. BURNETT, M. D., Professor of Bacteriology.

ROBERT C. LEWIS, Ph.D., Professor of Physiology and Biochemistry.

JAY W. WOODROW, Ph.D., Assistant Professor of Physics.

PAUL M. DEAN, Ph.D., Assistant Professor of Chemistry.

CHARLES M. GRUBER, Ph.D., Assistant Professor of Physiology and Pharmacology.

†CHARLES F. POE, A.M., B.S. (Phar.), Acting Assistant Professor of Pharmacy.

FRANCIS J. PERUSSE, B.Sc., Acting Assistant Professor of Pharmacy.

§ARTHUR T. EVANS, A.M., Instructor in Botany.

BESSIE R. GREEN, M.S., Instructor in Botany.

RUSSELL N. LOOMIS, B.S. (Phar.), Instructor in Chemistry.

HORACE B. VAN VALKENBURGH, M.S., Instructor in Chemistry.

†EDWIN D. HULL, M.S., Assistant in Botany.

AGNES P. BECHMANN, Ph.C., Assistant in Pharmacy.

* On leave of absence, June, 1917, to September, 1918, for war service.

† On leave of absence for war service.

‡ On leave of absence, February, 1918, to February, 1919, for war service.

§ On leave of absence, 1917-1918.

GENERAL STATEMENT

ORGANIZATION

The Board of Regents in April, 1911, authorized the establishment of a College of Pharmacy, to be a division of the School of Medicine. In June, 1913, the College of Pharmacy was organized as a separate department. It was opened in September, 1911, and from the beginning has maintained a standard of requirements for entrance and graduation equal to the best schools of pharmacy in the country.

COURSES AND DEGREES

The College offers thorough and practical courses in all subjects pertaining to pharmacy, and fits the student to pursue any of the various branches of the profession. It aims to cooperate with the State Board of Pharmacy and the State Pharmaceutical Association in maintaining a high standard for the profession of pharmacy in Colorado.

The obligation, imposed upon those who manufacture and dispense pharmaceuticals, by an increasing public demand for purer and better drugs and medicines, must result in their employing technically trained assistants for responsible positions which have heretofore, very frequently, been left to irresponsible and incompetent persons.

The operation of state and federal food and drug laws is creating a demand for thoroughly equipped pharmacists, drug inspectors and analysts. Well-trained chemists who also know something of physiology, pharmacology and bacteriology are needed by many manufacturing concerns, hospitals and public institutions, and in the government service. To qualify for such work there is required a general and technical training that can not be gained short of the three-year course in pharmacy, while those preparing for the better positions will need to take the four-year course.

The four-year course of study will appeal to students wishing a strong, well-balanced scientific course which embodies the essentials of a number of sciences but affords specialization along chemical lines. The degree granted, B.S. (Phar.), admits to the Graduate

School so that students who wish still more advanced work may proceed to the A.M. and Ph.D. degrees.

For the present the University continues to offer a two-year course preparing for the retail drug business, but even for this kind of work the student is strongly advised to take the regular three years of work leading to the degree of Pharmaceutical Chemist.

The following degrees are conferred upon students who fulfill the entrance requirements and complete the required work:

1. Bachelor of Science in Pharmacy, B.S. (Phar.), on completion of the four-year course.
2. Pharmaceutical Chemist, Ph.C., on completion of the three-year course.
3. Graduate in Pharmacy, Ph.G., on completion of the two-year course.

EQUIPMENT

Ample classroom, library and laboratory facilities are provided. The laboratories of Pharmacy, Chemistry, Botany, Physiology, Pharmacology and Bacteriology are all fully equipped with standard apparatus and materials.

REQUIREMENTS FOR ADMISSION

See pages 26, 31.

FEES

For fees, see pages 33, 35.

SCHEDULE OF STUDY

THE PH.C. COURSE

FIRST YEAR

FIRST SEMESTER		SECOND SEMESTER	
ENGLISH	(Rhetoric) 3	ENGLISH	(Rhetoric) 3
BOTANY	(Elements) 3	BOTANY	(Economic) 3
CHEMISTRY	(Inorg. Lectures) 3	CHEMISTRY	(Inorg. Lectures) 3
CHEMISTRY	(Inorg. Lab.) 2	CHEMISTRY	(Inorg. Lab.) 2
PHARMACY	(Phar. 1) 5	CHEMISTRY	(Qualitative) 2
MILITARY TRAINING		PHARMACY	(Phar. 2) 3
		MILITARY TRAINING	
<hr/>		<hr/>	
16		16	

SECOND YEAR

FIRST SEMESTER		SECOND SEMESTER	
PHYSIOLOGY	(Lect. and Lab.) 5	TRIGONOMETRY	3
CHEMISTRY	(Quant. Anal.) 4	CHEMISTRY	(Qualitative) 3
CHEMISTRY	(Organic Lect.) 4	CHEMISTRY	(Quant. Anal.) 2
PHARMACOGNOSY	4	CHEMISTRY	(Organic Prep.) 3
PHARMACY	1	PHARMACOGNOSY	2
MILITARY TRAINING		PHARMACY	5
		MILITARY TRAINING	
<hr/>		<hr/>	
18		18	

THIRD YEAR

FIRST SEMESTER		SECOND SEMESTER	
PHYSICS	(Gen. and Exper.) 5	PHYSICS	(Gen. and Exper.) 5
PHARMACOLOGY	7	BACTERIOLOGY	5
CHEMISTRY	(Drug Assaying) 3	CHEMISTRY	(Food Analysis) 3
PHARMACY	3	CHEMISTRY	(Alkal. Assays) 2
		PHARMACY	3
<hr/>		<hr/>	
18		18	

THE PH.G. COURSE

This is merely the first two years of the Ph.C. course except that quantitative analysis is replaced by pharmacy while work in pharmacology is given in place of trigonometry.

THE B.S. (PHAR.) COURSE

The first three years are the same as for Ph.C. while the fourth year includes economics, pharmacy, chemistry and other electives to amount of 30 hours.

DESCRIPTION OF COURSES

PHARMACY

1. THEORETICAL PHARMACY. First semester. 5 h.

Lectures and laboratory.

An introductory course in pharmacy consisting of a study of the principles of pharmacy with laboratory work to illustrate their application. This course also includes pharmaceutical arithmetic.

2. GALENICAL PREPARATIONS. Second semester. 3 h.

Lectures and laboratory.

A study of the pharmacopœial and national formulary preparations. The student also makes preparations of each of the official types.

3. OFFICIAL INORGANIC PHARMACY. First semester. 2 h.

Lectures and recitations.

A study of the official inorganic compounds and preparations, covering the history, the method of preparation, physical and chemical properties, and uses in pharmacy, of such substances as inorganic acids, bases, and salts.

4. OFFICIAL ORGANIC PHARMACY. Second semester. 2 h.

Lectures and recitations.

A study of the official organic compounds covering history, methods of preparation, physical and chemical properties of the various official organic substances.

5. ADVANCED GALENICAL PREPARATIONS. Second semester. 2 h.

A laboratory course dealing with the more complex galenical preparations of the pharmacopœia and the national formulary, such as standardized tinctures, fluid extracts, extracts, etc.

6. MEDICAL PHARMACY. First semester. 1 h.

A laboratory course intended to familiarize the student with various types of pharmaceutical preparations.

Intended only for medical students and may be taken separately or in connection with pharmacology.

7. HISTORY OF PHARMACY. Either semester. 1 h.
Readings and recitations.
The study of the evolution of modern pharmacy, the work of the various national organizations. Familiarizing the student with prominent men in pharmacy of both the past and the present.
8. PRESCRIPTIONS AND DISPENSING. Second semester. 3 h.
Recitations and laboratory.
A detailed study of the prescription and the art of compounding and dispensing.
9. COMMERCIAL PHARMACY. Either semester. 2 h.
Readings and recitations.
10. PHARMACY SEMINAR. Either semester. 1 or 2 h.
Readings and consultations.
A review of current pharmaceutical literature.
11. DENTAL AND TOILET PREPARATIONS. Either semester. 2-5 h.
Laboratory.
A study of the bases, the cleansing and antiseptic properties of, and the methods of manufacturing these preparations.
Prerequisites: Courses 1 and 2.
12. DOMESTIC PREPARATIONS. Either semester. 2 h.
Laboratory.
A course covering the methods for manufacturing various preparations such as furniture and metal polishes, washing powders, insecticides, disinfectants, etc.

BOTANY

1. ELEMENTS OF BOTANY. First semester. 3 h.
Recitations, laboratory, and illustrated lectures.
A general course in botany, dealing especially with the higher plants. Morphology, physiology, and microscopic anatomy are treated, with special attention to such structural features and chemical properties of plants as will best prepare the student for his later study of pharmacognosy.
2. ECONOMIC BOTANY. Second semester. 3 h.
Recitations, laboratory, and illustrated lectures.
A study of the more important plants and plant products of economic value; grains, seeds, nuts, fruits, vegetables, textile

fibers, tea, coffee, spices, crude drugs; technical microscopy; origin and improvement of cultivated plants.

11. **PROBLEMS IN BOTANY OF DRUG PLANTS.** Either semester. 5 h.

Students sufficiently prepared will be directed in botanical investigation of new or little known native drug plants.

For elective courses in Botany the student may consult the schedule of the College of Liberal Arts.

PHARMACOGNOSY

1. **PHARMACOGNOSY.** First semester. 4 h.

Recitations and laboratory.

A study of crude and powdered drugs including their history, classification, constitution, and means of identification.

2. **PHARMACOGNOSY.** Second semester. 2 h. Course 1 continued.

Recitations and laboratory.

3. **PHARMACOGNOSY.** Second semester. 3 h.

A more detailed laboratory study of powdered drugs and spices with special reference to their purity and adulteration.

PHYSIOLOGY AND PHARMACOLOGY

1. **ELEMENTS OF HUMAN PHYSIOLOGY.** First semester. 5 h.

A course of lectures, recitations and demonstrations, supplemented by laboratory experiments, giving a general knowledge of the structure and functions of the human body.

2. **PHARMACOLOGY, MATERIA MEDICA AND TOXICOLOGY.** First semester. 7 h.

This course deals with the physiological and toxicological actions of chemical substances and their therapeutic uses in medicine. Lectures and recitations, supplemented by laboratory experiments.

Prerequisites: Physiology and organic chemistry.

3. **PHARMACOLOGY.** Second semester. 3 h.

A less detailed course than 2, intended for students taking the two-year course in pharmacy.

4. **PHYSIOLOGICAL STANDARDIZATION.** Either semester. 2-5 h.

A laboratory course in the physiological assaying of drugs. Intended to familiarize the student with physiological methods

used in the standardization of these drugs and preparations of the pharmacopœia which are physiologically assayed.

Prerequisite: Course 2.

BACTERIOLOGY

1. GENERAL BACTERIOLOGY. Second semester. 5 h.

Lectures, recitations, and laboratory work on the chemistry and biology of bacteria, classification, methods of isolation, culture and staining; phenomena of infection, and cultural characteristics of the pathogenic organisms. Some time is also devoted to the methods of water and milk analysis, and the identification of cultures.

CHEMISTRY

1. GENERAL INORGANIC CHEMISTRY. Throughout the year. 11:00. 3 h.

A course of lectures dealing with the laws and theories of chemistry, together with a study of the elements and their most important compounds.

2. GENERAL INORGANIC CHEMISTRY. Both semesters. 2 h.

Laboratory and quiz sections.

3. QUALITATIVE ANALYSIS. Second semester. 2, 3, or 4 h.

A course in the identification and separation of the more common bases and acids.

5. QUANTITATIVE ANALYSIS. First semester. 4 h.

Lectures, recitations, and laboratory.

Elementary gravimetric and volumetric analysis, chemical calculations, etc.

Prerequisite: Course 3.

6. QUANTITATIVE ANALYSIS. Second semester. 2 h.

8. SANITARY WATER ANALYSIS. Either semester. 2 h.

A course in the chemical and bacteriological examination of water with regard to its use for drinking purposes.

Prerequisite: Course 5.

12. ORGANIC CHEMISTRY. 4 h.

A study of the properties of the more important organic compounds. Special stress is laid upon the theories underlying the subject and the proofs of the constitution of most of the substances studied.

14. LABORATORY PRACTICE IN ORGANIC PREPARATIONS. 3 h.

An advanced course in the preparation of typical aliphatic and aromatic compounds and their analysis.

Prerequisite: Course 12.

16. FOOD ANALYSIS. 3 h.

A detailed laboratory course giving practice in the official and standard methods for the analysis of foods and the detection of adulterants.

Prerequisite: Courses 5, 6, 12.

17. PHYSICAL CHEMISTRY. Throughout the year. 11:00. 3 h.

A lecture course presenting the modern physico-chemical theories concerning the states of aggregation of matter, solutions, thermo-chemistry, equilibria, chemical kinetics, electro-chemistry, and actino-chemistry.

18. PHYSICAL CHEMISTRY. First semester. 1:00. 2 h.

A laboratory course supplementing Course 17, consisting of the determinations of densities, molecular weights, thermo-chemical and optical constants, conductivity of solutions, electromotive force, transference numbers, viscosity, surface tension, electrochemical equivalents, transition points, etc.

24. DRUG ASSAYING: PHARMACOPEIAL TESTING. 3 h.

A laboratory course giving practice in the official and standard methods for the identification, determination of purity, detection of adulterants, and assaying of official drugs.

Prerequisite: Courses 5, 6, 12.

25. DRUG ASSAYING: ORGANIC ANALYSIS. 3 h.

A laboratory course in the qualitative and quantitative analysis of pharmaceutical and commercial organic products such as alcohols, ethers, esters, glycerine, soaps, formalin, organic acids, etc. Also the ultimate analysis of organic compounds.

Prerequisite: Courses 5, 6, 12.

26. DRUG ASSAYING: ALKALOIDAL ASSAYING. 2 h.

A course consisting of all the most important alkaloidal assays and the separation and detection of the alkaloids.

Prerequisite: Courses 5, 6, 12.

27. ADVANCED FOOD ANALYSIS. 3 h.

An advanced laboratory course in the official and standard methods of food analysis.

Prerequisite: Course 16.

28. **SANITARY CHEMISTRY.** Second semester. 3 h.

Lectures and laboratory.

A course in the sanitary and bacteriological examination of water for drinking purposes, in the chief methods of food analysis, and in the detection of adulterations. Primarily for Pharmacy students, but may be elected by students in other departments by special permission.

Prerequisite: Courses 5, 12.

MICROSCOPICAL CHEMISTRY

1. **MICROCHEMICAL ANALYSIS.** First semester. 3 h.

A study of the use of the microscope and its accessories. Practice in the examination and analysis of inorganic substances, with reference to rapid qualitative methods and the analysis of minute amounts of material.

2. **MICROSCOPICAL EXAMINATION OF FOODS.** Second semester. 3 h.

The microscopical examination of foods and condiments for the purpose of detecting deterioration, adulteration, and admixture.

Prerequisite: Course 1.

PHYSICS

1. **GENERAL PHYSICS—MECHANICS AND HEAT.** First semester. Tu. Th. 10:00. Lectures, two hours; recitations, two hours. 4 h.

Prerequisite: an elementary knowledge of plane trigonometry.

2. **GENERAL PHYSICS—ELECTRICITY, MAGNETISM, SOUND AND LIGHT.** Second semester. Tu. Th. 10:00. Lectures, two hours; recitations, two hours. 4 h.

Prerequisite: an elementary knowledge of plane trigonometry.

3. **EXPERIMENTAL PHYSICS.** First semester. One two-hour period per week. 1 h.

Quantitative laboratory work in the subjects of mechanics and heat.

Prerequisite: an elementary knowledge of plane trigonometry.

4. **EXPERIMENTAL PHYSICS.** Second semester. One two-hour period per week. 1 h.

Quantitative laboratory work in the subjects of electricity, magnetism, sound, and light.

Prerequisite: an elementary knowledge of plane trigonometry.

SUMMER SESSION

FACULTY, 1918

*LIVINGSTON FARRAND, A.M., M.D., LL.D., President of the University.
GEORGE NORLIN, Ph.D., Acting President; Professor of Greek.
MILO G. DERHAM, Ph.D., Director of the Summer Session; Professor of Latin.

INSTRUCTORS FROM OTHER INSTITUTIONS

GEORGE T. AVERY, A.M., Assistant Professor of Psychology and Education, Colorado Agricultural College.
FLORENCE EUDORA BISHOP, B.Lit., Instructor in Art, West High School, Cleveland, Ohio.
JAMES M. CALLAHAN, Ph.D., Professor of History and Political Science, West Virginia University.
ABRAHAM COHEN, Ph.D., Associate Professor of Mathematics, Johns Hopkins University.
HENRY S. CURTIS, Ph.D., Lecturer on Playgrounds, Public Recreation and Child Welfare.
BENJAMIN F. FINKEL, Ph.D., Professor of Mathematics, Drury College.
JOHN ROSS FRAMPTON, M.A., Mus.Bac., Professor of Piano and Organ and Instructor in Harmony, Iowa State Teachers College.
EASLEY S. JONES, A.M., Instructor in English, University of Illinois.
WALTER E. MCCOURT, A.M., Professor of Geology, Washington University.
ELIZABETH McMECHEN, Supervisor of First Grade Practice Teaching, Los Angeles State Normal School.
LEWIS E. MEADOR, A.M., Professor of History, Drury College.
SILVANUS G. MORLEY, Ph.D., Assistant Professor of Romance Languages, University of California.
ANITA C. POST, A.M., Instructor in Romance Languages, University of Arizona.

*On leave of absence June, 1917, to September, 1918, for war service.

M. SUSANA ROGERS, Director of Physical Education, Brimmer School, Boston, Massachusetts.

EMANUEL D. SCHONBERGER, A.B., M.O., Professor of Public Speaking, Washburn College.

WILSON M. SHAFER, A.B., Superintendent of Schools, Cripple Creek, Colorado.

MARK SKIDMORE, A.M., Assistant Professor of Romance Languages, University of Arizona.

ULYSSES G. WEATHERLY, Ph.D., Litt.D., Professor of Economics and Sociology, Indiana University.

H. B. WILSON, A.M., LL.D., Superintendent of Schools, Topeka, Kansas; Lecturer on Education.

INSTRUCTORS FROM THE UNIVERSITY OF COLORADO

FRED B. R. HELLEMS, Ph.D., LL.D., Dean of the College of Liberal Arts; Professor of Latin.

FRANCIS RAMALEY, Ph.D., Professor of Biology.

MELANCHTHON F. LIBBY, Ph.D., Professor of Philosophy.

EDWARD JACKSON, A.M., M.D., Sc.D., Professor of Ophthalmology.

JAMES F. WILLARD, Ph.D., Professor of History.

OLIVER C. LESTER, Ph.D., Professor of Physics.

FRANK E. THOMPSON, A.B., Director of the College of Education; Professor of Education.

JOHN S. McLUCAS, A.M., Professor of English.

LAWRENCE W. COLE, Ph.D., Director of the College of Home Economics and Social Service; Professor of Psychology.

CARBON GILLASPIE, M.D., Professor of Anatomy.

FRANK L. CLAPP, Ph.D., Professor of School Administration.

ARNOLD J. LIEN, Ph.D., Professor of Political Science.

ROBERT C. LEWIS, Ph.D., Acting Director of the Henry S. Denison Research Laboratory; Professor of Physiology and Biochemistry.

MELVILLE BLACK, M.D., Associate Professor of Ophthalmology.

C. HENRY SMITH, Ph.B., Librarian; Assistant Professor of Bibliography.

CARL C. ECKHARDT, Ph.D., Assistant Professor of History.

WILLIAM F. BAUR, Ph.B., Assistant Professor of Germanic Languages.

FRANK G. ALLEN, B.S. (M.E.), Assistant Professor of Engineering Drawing.

JAY W. WOODROW, Ph.D., Assistant Professor of Physics.

PAUL M. DEAN, Ph.D., Assistant Professor of Chemistry.

GEORGE H. LIGHT, Ph.D., Assistant Professor of Mathematics.

THOMAS MAITLAND MARSHALL, Ph.D., Assistant Professor of History.

HELEN MASTERS BUNTING, Director of Physical Education for Women.

EMILY WOOD EPSTEEN, Acting Dean of Women (Summer Session, 1918); Lecturer and Extension Instructor in Story-telling and Children's Literature.

DONALD MCFAYDEN, B.D., Ph.D., Instructor in History.

LORENA UNDERHILL, A.M., Instructor in Philosophy.

RUTH M. SHELLEDY, A.M., Instructor in German.

WILLIAM H. CRISP, M.D., D.Oph., Instructor in Ophthalmology.

WALTER F. MALLORY, B.S. (M.E.), Instructor in Mechanical Engineering.

EDWARD R. MUGRAGE, A.M., M.D., Instructor in Pathology.

MAUD E. CRAIG, A.M., Instructor in Latin.

CLAIR V. MANN, B.S. (C.E.), Instructor in Engineering Mathematics.

OSCAR A. RANDOLPH, Ph.D., Instructor in Physics.

GLADYS C. CURTIS, A.M., Instructor in Education.

JOHN W. RENNELL, Instructor in Art.

BESSIE R. GREEN, A.M., Instructor in Biology.

SUSAN BLAKEY, A.B., B.S., Instructor in Home Economics.

JOHN D. COOKE, A.M., Instructor in English Literature.

RUSSELL N. LOOMIS, B.S. (Phar.), Instructor in Chemistry.

HORACE B. VAN VALKENBURGH, M.S., Instructor in Chemistry.

BENJAMIN D. CORNELL, A.B., Instructor in Chemistry.

MELBOURNE C. EVANS, B.S., Instructor in Physical Education.

H. AUFWASSER, M.D., Instructor in Ophthalmology.

JOHN A. MCCAW, M.D., D.Oph., Instructor in Ophthalmology.

HIRAM R. STILWILL, M.D., Instructor in Ophthalmology.

RALPH HUBBARD, A.B., Assistant in Museum and in Zoology.

GENERAL STATEMENT

PURPOSE AND ORGANIZATION

The Summer Session was established in 1904. The School of Mountain Field Biology was opened in 1909. Courses in the Denver Division of the School of Medicine were first offered in 1912.

The Summer Session serves the needs of the following classes of students: (1) teachers and others who are not able to attend during the academic year; (2) regularly matriculated students who desire to supplement the work of the regular session; (3) students whose entrance preparation is deficient; (4) those who wish to review or extend their acquaintance with certain subjects without credit.

ADMISSION AND CREDITS

The courses are open without entrance examinations to all who can profit by them. Non-matriculated students on completion of courses receive certificates showing the amount and grade of the work accomplished. A certain number of college entrance courses are offered to those whose preparation for the University is incomplete. Regularly matriculated students are allowed, for most of the five-hour courses successfully completed, credit for two semester hours of the regular academic year; for certain courses, indicated by a †, Summer Session credit only is given. A certificate showing the amount and grade of work done in such courses is issued to those who desire it. Students who contemplate work toward an advanced degree should write to the Director of the Summer Session not later than June 1. For information regarding requirements for the Master of Arts degree in connection with Summer Session work, see page 187.

RELATION OF THE SUMMER WORK TO THE COLLEGE OF EDUCATION

The Summer Session constituency is largely made up of superintendents, principals, and teachers. In recognition of this fact there are teachers' courses in many departments and other courses conducted with a view to emphasizing educational methods and principles. Ample provision is made for those desiring to take work

counting toward the twenty hours of professional training prescribed by the Colorado Certification Law.

UNIVERSITY EXTENSION DIVISION

The University Extension Division provides an opportunity to students who cannot attend the University during the regular academic year, to continue work begun in the Summer Session. Announcement of University Extension courses may be obtained from the Registrar of the University.

PUBLIC LECTURES

Open lectures are given every afternoon or evening each week, affording students the opportunity of hearing speakers of eminent attainments in educational, literary, and scientific lines.

Arrangements have been made for a series of lectures on the causes and progress of the war. Courses on first aid and food conservation will be given, and for these special certificates will be issued for attendance or completion of the work assigned.

ADVANTAGES OF CLIMATE AND SURROUNDINGS

The climate and surroundings of Boulder afford exceptionally favorable conditions for summer study and recreation. The days are never uncomfortably warm; the nights are always cool. The air is dry and invigorating. On every side the scenery is varied, grand, and beautiful.

EXERCISE AND RECREATION; EXCURSIONS

The University gymnasium, the tennis courts and athletic field are open for the use of the students of the Summer Session. The region about Boulder offers abundant opportunities for mountain climbing. There are also conducted excursions each week, for students and faculty, to points of interest.

FEES

The fee for one course is ten dollars; for two or three courses, fifteen dollars; for each course after the third, five dollars; registration fee paid once each session by all students at Boulder, one dollar. Special fees are required for courses in the School of Mountain Field Biology at Tolland, for the Medical Courses in the Boulder Division of the Medical School and for Ophthalmology. In

Chemistry the laboratory fee is four dollars for each course taken. Special laboratory fees are required in certain other subjects.

ACCOMMODATIONS

The price for good board near the Campus varies from \$5.00 to \$7.00 a week. Rooms may be obtained for \$2.00 a week. By the formation of boarding clubs or by doing light housekeeping, expenses are materially reduced. The Registrar has a list of desirable boarding and rooming places and will supply information upon application.

REDUCED RAILWAY RATES

The Colorado railways offer a rate of eighty per cent of twice the one-way fare from Colorado points to Boulder.

Low excursion rates for the summer are given by all the railways from eastern and southern points to Colorado.

Those who wish to take advantage of them are advised to apply to their local agents for official information.

SESSION OF 1918

The Fifteenth Summer Session of the University opens June 24 and closes August 3. It is desirable that students register June 21 or 22. Final examinations are held August 2 for all students who wish credit or certificates for their work.

Courses in Liberal Arts, in Medicine, and in Public Health are offered at Boulder; courses in Mountain Field Biology, three weeks at Boulder and three weeks at Tolland; courses in Ophthalmology, in the Denver Division of the School of Medicine.

ADDITIONAL INFORMATION

The announcement of the Summer Session will be sent upon request.

COURSES

ART

See under Drawing and Public School Art, and Latin and Greek.

BIOCHEMISTRY

1. BIOCHEMISTRY FOR MEDICAL STUDENTS.

BIOLOGY

1. NATURE STUDY.
2. ELEMENTS OF BOTANY.
3. FOREST BOTANY.
4. ORNITHOLOGY.

See also under School of Mountain Field Biology.

CHEMISTRY

1. GENERAL INORGANIC CHEMISTRY (Lectures).
2. GENERAL INORGANIC CHEMISTRY (Laboratory).
3. QUALITATIVE ANALYSIS.
4. QUANTITATIVE ANALYSIS.
5. ADVANCED QUANTITATIVE ANALYSIS.
6. ORE ANALYSIS.
7. ANALYSIS OF IRON AND STEEL.
8. GAS ANALYSIS.
9. ORGANIC CHEMISTRY (Lectures).
10. ORGANIC CHEMISTRY (Laboratory).
11. QUALITATIVE ORGANIC ANALYSIS.
12. ULTIMATE ORGANIC ANALYSIS.
13. PHYSICAL CHEMISTRY (Lectures).
14. PHYSICAL CHEMISTRY (Laboratory).
15. TEACHERS' COURSE IN CHEMISTRY.
16. SANITARY WATER ANALYSIS.
17. MINERAL WATER ANALYSIS.
18. FOOD ANALYSIS.
19. DRUG ANALYSIS.
20. CHEMISTRY OF FOODS.
21. RESEARCH COURSE IN CHEMISTRY.
22. BIOCHEMISTRY.

DRAWING AND PUBLIC SCHOOL ART

- †1. TEACHERS' COURSE IN PUBLIC SCHOOL ART.
- †2. ADVANCED COURSE IN PUBLIC SCHOOL ART.
- †3. PICTURE STUDY.
4. COLOR AND DESIGN.
5. INTERIOR DECORATION.
6. FREEHAND DRAWING.
7. MECHANICAL DRAWING.
8. DESCRIPTIVE GEOMETRY.

ECONOMICS AND SOCIOLOGY

1. PRINCIPLES OF ECONOMICS.
2. CONSERVATION OF NATIONAL RESOURCES.
3. PRINCIPLES OF SOCIOLOGY.
4. PROBLEMS OF POPULATION.
5. THE CHILD AND SOCIETY.

EDUCATION

1. PRINCIPLES OF PRE-SCHOOL EDUCATION.
2. PUBLIC EDUCATION: ITS ORGANIZATION AND MANAGEMENT.
3. PRINCIPLES OF TEACHING.
4. KINDERGARTEN THEORY.
5. PRIMARY EDUCATION.
6. ELEMENTARY EDUCATION.
7. SECONDARY EDUCATION.
8. SCHOOL ADMINISTRATION.
9. SCHOOL TESTS AND SURVEYS.
10. SOCIAL PSYCHOLOGY.

Teachers' Courses in various departments.

ENGLISH LANGUAGE AND LITERATURE

1. MASTERPIECES OF PROSE FICTION I.
2. MASTERPIECES OF PROSE FICTION II.
3. AMERICAN LITERATURE BY TYPES.
4. TEACHERS' COURSE IN ENGLISH.
5. ADVANCED COMPOSITION.
6. NINETEENTH CENTURY PROSE.
7. SHAKESPEARE.
8. THE SHORT STORY.

9. THE ROMANTIC MOVEMENT.
10. PHILOSOPHY OF BROWNING.
11. CLASSICAL MYTHOLOGY.

See also under Latin and Greek, and Reading and Public Speaking.

GEOLOGY AND GEOGRAPHY

1. PRINCIPLES OF EARTH SCIENCE.
2. FIELD GEOLOGY.
3. GEOGRAPHIC INFLUENCES.

GERMAN

1. ELEMENTARY GERMAN.
2. ELEMENTARY READING AND ORAL PRACTICE.
3. ELEMENTARY GERMAN, CONTINUATION.
4. GERMAN CONVERSATION.
5. TEACHERS' COURSE IN GERMAN.
6. DEUTSCHE NOVELLE.

HISTORY

1. OUTLINE HISTORY OF GREECE.
2. OUTLINE HISTORY OF ROME.
3. HISTORY OF THE MIDDLE AGES, 376-1300.
4. TEACHERS' COURSE IN HISTORY.
5. HISTORY OF RUSSIA.
6. ENGLAND UNDER THE STUARTS.
7. THE EARLY HISTORY OF THE CHRISTIAN CHURCH.
8. MODERN ENGLISH HISTORY.
9. THE UNITED STATES AND THE WAR.
10. THE BRITISH COLONIAL SYSTEM AND THE AMERICAN REVOLUTION.
11. HISTORY OF THE UNITED STATES FROM 1801 TO 1850.
12. LATIN AMERICAN HISTORY AND CONTEMPORARY LATIN AMERICAN PROBLEMS.

HOME ECONOMICS*

1. FOODS AND COOKERY.
2. TEXTILES AND CLOTHING.
3. CHEMISTRY OF FOODS.
4. FOOD ANALYSIS.

* Courses in this department count toward the B.S. degree only.

LATIN AND GREEK

1. VIRGIL, ECLOGUES AND GEORGICS.
2. CLASSICAL MYTHOLOGY.
3. LATIN VERB SYNTAX FOR TEACHERS.
4. GREEK ART.

LIBRARY SCIENCE AND PRACTICE

1. LIBRARY SCIENCE AND PRACTICE.

MANUAL TRAINING AND SHOP WORK

- †1. TEACHERS' COURSE IN WOODWORKING.
- †2. TEACHERS' COURSE IN FORGING.
3. WOODWORKING.
4. FORGING.
- †5. AUTOMOBILES.
6. MACHINE SHOP.

MATHEMATICS

1. SOLID GEOMETRY.
2. TRIGONOMETRY.
3. COLLEGE ALGEBRA.
4. PLANE ANALYTIC GEOMETRY.
5. DIFFERENTIAL CALCULUS.
6. TEACHERS' COURSE IN MATHEMATICS.
7. FUNDAMENTAL CONCEPTS OF MATHEMATICS.
8. DIFFERENTIAL EQUATIONS.
9. LEAST SQUARES.
10. FOURIER'S SERIES.
11. PROJECTIVE GEOMETRY.
12. DIFFERENTIAL GEOMETRY.
13. GAULOIS' THEORY OF EQUATIONS.
14. DEFINITE INTEGRALS.
15. INTRODUCTORY COURSE IN ANALYSIS.

MOUNTAIN FIELD BIOLOGY

(Three weeks at Boulder and three weeks at Tolland.)

1. FIELD AND FOREST BOTANY.
2. PLANT ECOLOGY.
3. SYSTEMATIC BOTANY.
4. RESEARCH PROBLEMS IN BOTANY.

See also under Biology.

MUSIC

- †1. PUBLIC SCHOOL MUSIC.
- 2. ELEMENTARY HARMONY.
- 3. THE APPRECIATION OF MUSIC.

OPHTHALMOLOGY

- 1. SPECIAL ANATOMY AND HISTOLOGY OF THE EYE.
- 2. EMBRYOLOGY AND ANOMOLIES OF THE EYE.
- 3. PATHOLOGY, SYSTEMATIC AND LABORATORY.
- 4. PRINCIPLES AND ADVANCED PROBLEMS IN REFRACTION AND OCULAR MOVEMENTS.
- 5. GENERAL OPHTHALMIC DIAGNOSIS.
- 6. OPHTHALMOSCOPIC DIAGNOSIS.
- 7. DAILY UNIVERSITY EYE CLINIC.
- 8. SPECIAL LECTURES ON RELATIONS OF EYE DISEASES TO GENERAL MEDICINE AND SURGERY.

PHILOSOPHY

- 1. PRESENT DAY PHILOSOPHY.
- 2. PHILOSOPHY OF BROWNING.
- 3. PRACTICAL ETHICS.

PHYSICAL EDUCATION

ATHLETICS AND COACHING.

- †1. FOOTBALL.
- †2. BASEBALL.
- †3. BASKET-BALL.
- †4. TRACK AND FIELD ATHLETICS.

GYMNASTICS, ATHLETICS, DANCING, PLAYGROUND MANAGEMENT.

- †1. GENERAL COURSE IN ATHLETICS.
- †2. ADVANCED GYMNASTIC COURSE.
- †3. AESTHETIC DANCING.
- 4. PLAYGROUND COURSE.

PHYSICS

- 1-2. GENERAL COLLEGE PHYSICS (Double Course).
- 3-4. EXPERIMENTAL PHYSICS.

Laboratory work of college grade in mechanics, heat, and sound.

- 5. ELECTRICAL MEASUREMENTS.

6. ADVANCED ELECTRICAL MEASUREMENTS.
7. TEACHERS' COURSE IN PHYSICS.
8. DESCRIPTIVE ASTRONOMY.
- 9-16. ADVANCED COURSES IN PHYSICS.
17. RESEARCH COURSE IN PHYSICS.

PHYSIOLOGICAL CHEMISTRY

See under Biochemistry.

PHYSIOLOGY AND SANITARY SCIENCE

1. TEACHERS' COURSE IN ANATOMY AND PHYSIOLOGY.
2. SANITARY SCIENCE.

POLITICAL SCIENCE

1. AMERICAN GOVERNMENT (College Civics).
2. INTERNATIONAL LAW AND RELATIONS.
3. STUDIES IN CONTEMPORARY DEMOCRACY AND PRACTICAL CITIZENSHIP.

See also under Economics and Sociology.

PSYCHOLOGY

1. GENERAL PSYCHOLOGY.
2. CHILD PSYCHOLOGY.
3. MENTAL TESTS.
4. APPLIED PSYCHOLOGY.

PUBLIC SPEAKING AND READING

1. PRINCIPLES OF PUBLIC SPEAKING AND READING.
2. PRACTICAL PUBLIC SPEAKING.
3. LITERARY INTERPRETATION.

ROMANCE LANGUAGES

FRENCH

1. BEGINNERS' COURSE.
2. ELEMENTARY FRENCH READING COURSE WITH PRACTICE IN SPEAKING.
3. INTERMEDIATE FRENCH.
4. ADVANCED FRENCH: A GENERAL SURVEY OF FRENCH LITERATURE.

SPANISH

1. BEGINNING SPANISH.
2. ELEMENTARY SPANISH READING AND ORAL PRACTICE.
3. INTERMEDIATE SPANISH.
4. SPANISH DRAMA OF THE NINETEENTH CENTURY.

STORY-TELLING

- †1. STORY-TELLING AND CHILDREN'S LITERATURE.

SURVEYING AND MECHANICS

- 1-2. SURVEYING (Double Course).
3. TECHNICAL MECHANICS—STATICS.
4. HYDRAULICS.

UNIVERSITY EXTENSION DIVISION

FACULTY

*LIVINGSTON FARRAND, A.M., M.D., LL.D., President of the University.

GEORGE NORLIN, Ph.D., Acting President of the University.

LORAN D. OSBORN, Ph.D., Director; Professor of Sociology.

†C. HENRY SMITH, Ph.B., Librarian of the University; Secretary of the Bureau of Library Extension.

ELMORE PETERSEN, A.B., Superintendent of Southeastern Colorado District.

ARTHUR E. GILMAN, A.B., Secretary of the Bureau of Community Welfare.

JAMES C. STEPHENS, A.B., Secretary of the Bureau of Vocational Instruction.

‡CORNELIUS C. JANZEN, A.M., Superintendent of Western Colorado District.

ALMA GABRIEL, A.B., Extension Recorder.

The Faculty includes also Professors and Instructors in the various University departments who give extension courses or lectures, together with special Extension Instructors appointed to conduct classes in various centers throughout the State.

NON-RESIDENT INSTRUCTIONAL STAFF

ERNEST C. BLAIR, *Rocky Ford*, Extension Instructor in Automobile Operation.

ED. COREYELL, *Canon City*, Extension Instructor in Automobile Operation.

F. A. CRADLER, *Rockvale*, Extension Instructor in Citizenship and English.

* On leave of absence, June, 1917, to September, 1918, for war service.

† On leave of absence for war service, first semester, 1917-1918.

‡ First semester, 1917-1918.

EMILY WOOD EPSTEEN, *Wiggins*, Extension Lecturer and Instructor in Story-telling and Children's Literature.

GEORGIA L. FIELD, Ph.D., *Mankato, Minnesota*, Extension Instructor in Comparative and English Literature.

H. W. FITTON, *Trinidad*, Extension Instructor in Telegraphy.

JOSEPH S. FUDIE, *Pueblo*, Extension Instructor in Telegraphy.

ARTHUR WORCK HALL, *Pueblo*, Extension Instructor in Citizenship and English.

HELGA KATINCKA HENDRIKS, *Pueblo*, Extension Instructor in French.

R. C. JOHNSON, *Grand Junction*, Extension Instructor in Telegraphy.

ANNIE K. KEIGHTLEY, A.B., *Pueblo*, Extension Instructor in English.

WILLIAM F. V. LEICHT, A.B., *Cripple Creek*, Extension Instructor in French.

SARAH LLOYD, *Rockvale*, Extension Instructor in Citizenship and English.

ANTONIO LUCERO, *Santa Fe, New Mexico*, Extension Instructor in Spanish.

JAMES ARCHIBALD MCKEE, A.M., *Pueblo*, Extension Instructor in Citizenship and English.

DAVID McMARTIN, *Leadville*, Extension Instructor in Citizenship and English.

FREDERICK H. MERTEN, A.M., *Trinidad*, Extension Instructor in Citizenship and English.

JASPER T. MOSES, A.M., *Pueblo*, Extension Instructor in Spanish.

JAMES ARTHUR PHELPS, A.B., LL.B., *Pueblo*, Extension Instructor in Citizenship and English.

RENA FRANCES RYAN PHELPS, *Pueblo*, Extension Instructor in Citizenship and English.

MORRISON NEWTON PORTER, A.M., *Pueblo*, Extension Instructor in Citizenship and English.

BESSIE L. NEWTON, *Leadville*, Extension Instructor in Citizenship and English.

LEE SAUNDERS, *Walsenburg*, Extension Instructor in Citizenship and English.

GENERAL STATEMENT

The Extension Division was organized in 1912. It aims to make the campus of the University coextensive with the State, in keeping with the new idea that a state university exists for all the people and not for a favored few alone.

The various departments of the University have at their disposal material that can be of great value in the development of the resources of the State. Particularly is this true in connection with the new problems of community welfare, and of business and industrial development. The Extension Division endeavors to connect the University departments with the people who wish to utilize these resources. This is done through two main departments, with various subdivisions, as appears in the following outline of Extension activities:

I. Department of Instruction:

- Correspondence Instruction.
- Class Instruction.
- Vocational Instruction.
- Visual Instruction.

II. Department of Public Service:

- Lectures.
- Community Welfare.
- Business Short Courses.
- Library Extension.
- Municipal Information.
- Publications.

DEPARTMENT OF PUBLIC SERVICE

The Department of Public Service deals with those more general phases of public education and community welfare which can not be adequately met by courses of formal instruction.

Lectures by members of the University faculties and others are arranged, separately and in courses, covering a wide range of subjects. Stereopticon slides of an educational character are furnished, at cost of transportation, for use in the public schools and in entertainments that are of interest to both pupils and parents.

Assistance is given to communities throughout the State, upon request, in solving the new problems that have arisen in our complex life. Community Welfare Conferences are held, involving a preliminary study or social survey of the town, a cooperative conference program of three or four days' duration, and a community welfare exhibit. A special bulletin, published by the Bureau of Community Welfare, will be sent upon request.

Through the Department of Education, cooperating with superintendents and groups of teachers, a comparative study is made of school systems and the educational principles involved, and other kinds of assistance are rendered to public schools.

Information and assistance are given concerning public health and sanitation. Suggestions are made, when desired, for the guidance of clubs and organizations, and outline programs are furnished.

Through the University Library, books and package libraries are sent to high schools, clubs, and individuals. Inquiries for information are answered from the resources of the library and the various departments of the University. In writing for material from the library, address, University of Colorado Library.

Business Short Courses are conducted, either in connection with conventions of business men, or at sessions convened for this special purpose. Each course covers a period of three or four days and treats the various aspects of modern business problems.

Bulletins are published from time to time making available to the public the results of investigations carried on by members of the University faculties.

DEPARTMENT OF INSTRUCTION

The Department of Extension Instruction offers formal courses of study by correspondence and in classes, to such persons as wish to engage in systematic study without leaving home or giving up their regular occupations.

Both academic and vocational courses are given. The academic courses cover a large part of the regular curriculum of the College of Liberal Arts, and, in general, receive credit which applies toward a university degree. Courses in secondary education are also offered, particularly for the benefit of those beyond the high-school age or living where a high school is not accessible.

The Vocational courses are intended more especially for men and women in offices, stores and industrial life who desire to increase the value of their work and to gain a better understanding of its correlation with the business world in general. The daily task and the study of the educational principles underlying it thus supplement each other. The vocational courses are granted recognition by means of a University Extension certificate.

Welfare courses and special war courses are offered in such subjects as Telegraphy; First Aid to the Injured; English Language and Citizenship for foreigners in industrial groups; Infant Hygiene and courses of a similar nature to groups of mothers.

Courses in clinical laboratory methods are given as a part of the work of the Department of Clinical Pathology of the School of Medicine. They are intended primarily for practicing physicians and for nurses. For list of courses at present available see page 271. Other courses are in preparation. Special bulletin will be sent upon request.

CORRESPONDENCE INSTRUCTION

UNIT OF WORK AND UNIVERSITY CREDIT.—When the work given by correspondence is of University grade and college entrance requirements have been fulfilled, it is granted University credit of equal value to that done in residence. A course that consists of forty assignments is granted five hours' credit toward the 120 hours required for the A.B. degree; a course of thirty-two assignments, four hours' credit; a course of twenty-four assignments, three hours'

credit; and a course of sixteen assignments, two hours' credit. It is estimated that a five-hour course of forty lessons will require a minimum of one hour of study a day, six days in the week, for forty weeks. The unit of work is thus a course divided into eight assignments, involving one hour's credit, and requiring about one hour's study a day for a period of eight weeks. One-fourth of the work for the A.B. degree may be done in the Extension Division.

INSTRUCTORS.—Correspondence instruction is carried on under the immediate supervision of the members of the University faculty.

METHOD.—The student who desires to undertake correspondence-study should enroll directly with the University Extension office upon blanks furnished for that purpose on application. After the enrollment has been duly completed, assignments of lessons prepared by the instructors will be sent to the student, together with directions concerning textbooks, study, outline work, and such other details as may be deemed helpful. The student may begin his course at any time and proceed with the work as fast as he wishes. An examination is given at the end of the course.

WORK, PARTLY BY UNIVERSITY EXTENSION, FOR MASTER OF ARTS DEGREE.—For information regarding requirements for the Master of Arts degree in connection with University Extension Work, see page 188.

EXPENSES.—The fee for each correspondence course of forty lessons is \$20.00; for a shorter course the fee is proportionately less—that is, a three-hour course (twenty-four lessons), is \$12.00, and a two-hour course (sixteen lessons), \$8.00. The unit of reckoning is a course of eight assignments, involving one hour's credit, and costing \$4.00. Where several courses are taken at one time, there is a reduction of 25 per cent. on all fees in excess of \$20.00. The fees are payable in advance. The textbooks are purchased by the students themselves, as is done by resident students. Reference books are loaned by the University Library so far as its resources will permit.

CLASS INSTRUCTION

ORGANIZATION AND MEETINGS.—University Extension Classes are organized in places where groups of students may wish to study the same course together. The class meets in the evening, late afternoon, or on Saturday, and for as many sessions as the course studied may require. The class should enroll directly with the Univer-

sity Extension office upon blanks furnished for that purpose on application, after which, other details of organization will be completed.

CREDIT.—Where University credit is involved, the class usually holds a double-period session (100 minutes) each week during the school year, or for a single semester. The work approximates as closely as possible that taken in residence—in the quality of work done, the conduct of the courses, the time required of the student for preparation, and the amount of credit given.

Upon the completion of such a course and the passing of a satisfactory examination, the work will receive the same credit as a similar two-hour course taken at the University, namely, two hours for a semester or four hours for the academic year. If the class prefers, sessions may be held less frequently than once a week, or for a shorter period than 100 minutes; in which case credit will be allowed in proportion.

INSTRUCTORS AND CLASS LEADERS.—The classes are conducted under the supervision of the heads of the appropriate departments at the University, but with different arrangements in different places so far as local leadership is concerned:

1. With a University instructor, when the class is located in a town near the University.

2. With a local instructor of University qualifications, when the class is too far away to be reached by an instructor from the University.

3. With a class leader, when a group of students may wish to unite for study where no qualified instructor is available in the subject desired. In this case, one of the members of the class is appointed class leader, and the course is conducted directly with the University by correspondence.

FEES.—The fees for class instruction in academic courses are \$5.00 per student for a class meeting weekly for a double period throughout one school semester (two credits, in credit courses); or \$10.00 for such a class conducted during the school year (four credits, in credit courses); or in the same proportion for classes meeting less frequently or for a shorter recitation period.

The fees for instruction in business and industrial classes are at the uniform rate of fifty cents per lesson, making a course of ten lessons cost each student \$5.00; sixteen lessons, \$8.00, and so on in the same proportion.

EXTENSION COURSES

BIOLOGY

1. BIOLOGICAL THEORIES.
2. SANITARY SCIENCE.
3. HYGIENE.
4. ELEMENTS OF ZOOLOGY.
5. ECONOMIC ZOOLOGY.
6. ICHTHYOLOGY.
7. ENTOMOLOGY.
8. PALEOBOTANY.
9. MOLLUSCA.
10. ASSIGNED READINGS IN BIOLOGY.
11. ORNITHOLOGY.

BUSINESS

1. RETAIL SELLING AND STORE MANAGEMENT.
2. ADVERTISING.
3. ACCOUNTANCY.
4. INSURANCE.

CHEMISTRY

Work by special arrangement.

CHILD WELFARE

1. HYGIENE OF THE CHILD'S BODY.
2. HYGIENE OF THE CHILD'S MIND.

CITIZENSHIP

1. COURSES PREPARING FOR NATURALIZATION.
2. ENGLISH.
3. ARITHMETIC.

ECONOMICS

1. ECONOMIC RESOURCES AND COMMERCIAL GEOGRAPHY.
2. ECONOMIC HISTORY OF THE UNITED STATES.
3. PRINCIPLES OF ECONOMICS.

EDUCATION

1. PRINCIPLES OF EDUCATION.
2. PRINCIPLES OF TEACHING.
3. ANTHROPOLOGY.
4. ETHNOLOGY.
5. SOCIAL PSYCHOLOGY.
6. EDUCATION AND SOCIETY.
7. CHILD STUDY.
8. ORGANIZATION AND ADMINISTRATION OF SCHOOLS.
9. EDUCATIONAL THEORY.
10. PRACTICUM IN EDUCATION.
11. SCHOOL SURVEYS.

ENGINEERING (ELECTRICAL)

1. ELEMENTS OF ELECTRICITY AND DIRECT-CURRENT MACHINERY.
2. ALTERNATING CURRENTS AND ALTERNATING-CURRENT MACHINERY.
3. CENTRAL ELECTRIC STATIONS.
4. ELECTRIC WIRING.
5. TELEPHONES AND TELEPHONE APPARATUS.
6. ELECTRICAL MACHINERY.
7. TELEGRAPHY.

Graduate courses arranged for engineering alumni.

ENGINEERING (MECHANICAL)

1. ENGINEERING MATHEMATICS.
2. ENGINEERING MATERIALS.
3. FREEHAND DRAWING.
4. MECHANICAL DRAWING.
5. DESCRIPTIVE GEOMETRY.
6. BOILERS.
7. STEAM ENGINES.
8. CONSTRUCTION AND OPERATION OF AUTOMOBILES.
9. CONSTRUCTION AND OPERATION OF AEROPLANES.

Graduate courses arranged for engineering alumni.

ENGLISH LANGUAGE

1. FRESHMAN ENGLISH.
2. ADVANCED COMPOSITION.
3. SHAKESPEARE.
4. JOURNALISM.
5. SHORT STORY WRITING.

ENGLISH LITERATURE

1. HISTORY OF ENGLISH LITERATURE.
2. AMERICAN AUTHORS.
3. SHAKESPEARE: ALL THE PLAYS.

FIRST AID TO THE INJURED

1. LECTURES AND DEMONSTRATIONS.

FRENCH

1. BEGINNERS' COURSE (Classes).
2. PROSE COMPOSITION AND CONVERSATION (Classes).
3. FRENCH LITERATURE (Classes).
4. ADVANCED PROSE COMPOSITION (Correspondence or in Classes).

GERMAN

1. COMPOSITION (Elementary).
2. ADVANCED GERMAN COMPOSITION.
3. THE GERMAN NOVELLE.

GREEK

1. ELEMENTARY COURSE.
2. CLASSICAL MYTHOLOGY.

HISTORY

1. MEDIEVAL HISTORY.
2. MODERN HISTORY.
3. EUROPE SINCE 1815.
4. ENGLISH HISTORY TO 1558.
5. ENGLISH HISTORY 1558 TO THE PRESENT TIME.

LATIN

1. LATIN PROSE.
2. LATIN LITERATURE.
3. ROMAN HISTORY.
4. MARTIAL AND PLINY.

MATHEMATICS

1. COLLEGE ALGEBRA.
2. PLANE TRIGONOMETRY.
3. PLANE AND SPHERICAL TRIGONOMETRY.
4. SOLID GEOMETRY.
5. PLANE ANALYTIC GEOMETRY.

6. DIFFERENTIAL CALCULUS.
7. INTEGRAL CALCULUS.
8. DIFFERENTIAL EQUATIONS.
9. ADVANCED COLLEGE ALGEBRA.
10. HISTORY OF MATHEMATICS.

MEDICINE

CLINICAL LABORATORY METHODS

1. HEMATOLOGY A.
2. HEMATOLOGY B.
3. BLOOD MORPHOLOGY.
4. MICROSCOPY.

MUSIC

1. HARMONY.

PHILOSOPHY

1. HISTORY AND PHILOSOPHY OF EDUCATION.
2. ETHICS.
3. HISTORY OF PHILOSOPHY.
4. LOGIC.

PHYSICS

1. GENERAL PHYSICS.
2. THEORETICAL MECHANICS—STATICS.
3. THEORETICAL MECHANICS—DYNAMICS.
4. DESCRIPTIVE ASTRONOMY.
5. VECTOR ANALYSIS.

PSYCHOLOGY

1. GENERAL PSYCHOLOGY.

SANITARY SCIENCE

See Biology.

SOCIOLOGY

1. INTRODUCTION TO THE STUDY OF COMMUNITY LIFE.
2. SOCIAL PROBLEMS.
3. THE FAMILY.

SPANISH

1. BEGINNERS' COURSE (Classes).

STORY-TELLING

1. STORY-TELLING AND CHILDREN'S LITERATURE.

SECONDARY EDUCATION

Arranged upon application.

CATALOGUE OF STUDENTS

GRADUATE SCHOOL

NAME	RESIDENCE
Anderson, Jesse May, A.B.....	Hubbard, Texas
University of Colorado; Trinity University, 1916.	
English Literature, Philosophy.	
Auten, Nellie Mason, A.B., A.M.....	Princeville, Illinois
Wellesley College, 1898; University of Chicago, 1901.	
English Literature.	
Barnes, Eleanor, A.B.....	Lansing, Michigan
Vassar College, 1913.	
English Literature, Education, and English Language.	
Barrett, David Dean, A.B.....	Boulder
University of Colorado, 1915.	
Latin.	
Baum, Eva Margaret, A.B.....	Natoma, Kansas
University of Colorado, 1916.	
Chemistry.	
Beard, Harry Randall, A.B.....	Denver
University of Colorado, 1917.	
Chemistry.	
Beattie, Wayne Stephenson, B.S. (M.E.).....	La Salle
University of Colorado, 1917.	
Mechanical Engineering.	
Becker, Lewis Michael, B.S. (M.E.).....	Quincy, Illinois
University of Illinois, 1916.	
Mechanical Engineering.	
Blakey, Susan, A.B., B.S.....	Boulder
University of Colorado, 1914; Columbia University, 1915.	
Biochemistry, Physiology.	
Brown, Marie Alice Crum, A.B.....	Meeker
Drury College, 1914.	
Philosophy, English Literature.	
Coffin, Reuben Clare, A.B.....	Boulder
University of Colorado, 1909.	
Physics.	
Coit, Norman Hubert, B.S. (E.E.).....	Denver
University of Colorado, 1917.	
Electrical Engineering.	
Cooke, John Daniel, A.B., A.M.....	Boulder
Leland Stanford University, 1914, 1915.	
Comparative and English Literature, Latin.	
Cornell, Benjamin David, A.B.....	Boulder
University of Colorado, 1915.	
Chemistry.	
Crary, Ruth Naomi, A.B.....	Boulder
University of Colorado, 1910.	
English Language.	
* Dierstein, Arthur Lewis, B.S. (C.E.).....	State College, Pennsylvania
University of Colorado, 1911.	
Civil Engineering.	
Dungan, Quentin Randolph, B.S. (Ch.E.).....	Boulder
University of Colorado, 1916.	
Chemical Engineering.	

* Registered in 1916-1917 after the publication of the catalogue.

NAME	RESIDENCE
Factorovich, Michael, A.B.....	Buffalo, New York
University of Colorado, 1917.	
Romance Languages, Latin.	
Flach, John Jacob, B.S. (E.E.).....	Boulder
University of Colorado, 1915.	
Electrical Engineering.	
Fleming, Arch I., A.B.....	Perry, Oklahoma
Oklahoma State University, 1916.	
History, Education.	
Fleming, Marjorie Elizabeth, A.B.....	Boulder
University of Colorado, 1917.	
Romance Languages.	
Gabriel, Alma, A.B.....	Denver
University of Colorado, 1917.	
Social Science.	
Garbarino, Lucinda Marie, A.B., A.M.....	Boulder
University of Colorado, 1901, 1902.	
Romance Languages, English Literature.	
Glass, James LeRoy, A.B., A.M.....	Broomfield
Southwestern University, 1911; Northwestern University, 1915.	
Economics, Sociology, Education.	
Good, Alvin, A.B.....	Miltonvale, Kansas
Kansas State Normal College, 1910.	
Sociology, Psychology, Education.	
Greene, John Fewlass, B.S. (C.E.).....	Denver
University of Colorado, 1916.	
Civil Engineering.	
Hadley, Agnes Lee, A.B.....	Boulder
University of Kansas, 1899.	
Romance Languages.	
Hall, Eugenia Lucile, B.S.....	Mattawan, Michigan
University of Chicago, 1917.	
Chemistry.	
Hall, Lothrop James, A.B.....	Boulder
Missouri Valley College, 1916.	
Education, Psychology.	
Heaton, Wilbur McKean, Ph.B.....	Pueblo
Dickinson College, 1904.	
Chemistry.	
Hendrickson, Victor James.....	Denver
Geology, Mineralogy.	
Heubner, Bernhard Phillip, A.B.....	Boulder
Knox College, 1910.	
Education, Sociology.	
Holden, Mary Lathrop, A.B.....	Buffalo, New York
Cornell University, 1903.	
English Literature, Sociology.	
Howard, Harvey James, A.B., M.D., A.M.....	Boston, Massachusetts
University of Michigan, 1904; University of Pennsylvania, 1908; Har- vard, 1917.	
Ophthalmology.	
Howe, William Warren, A.B.....	Pueblo
University of Colorado, 1915.	
Chemistry.	
Huelskemper, Edward H., B.S. in Agr.....	Longmont
University of Missouri, 1916.	
Botany.	
Jaffa, Bertram Barr, A.B.....	Roswell, New Mexico
University of Colorado, 1917.	
Zoology.	
Jessup, Andrew Simes, A.B.....	Cheyenne, Wyoming
University of Indiana, 1911.	
Education, History.	
Koch, Dorothy Liebold.....	Aspen
Chemistry, Physics, Mathematics.	

NAME	RESIDENCE
Kretschmer, Otto Sheibel, A.B.....	Boulder
Catholic University of America, 1913.	
Physiology, Anatomy, Biochemistry.	
Krueger, George Henry, B.S. (M.E.).....	Denver
University of Colorado, 1917.	
Mechanical Engineering.	
Landers, Joseph Samuel, A.B.....	Boulder
University of Colorado, 1917.	
Education, Philosophy, Sociology.	
Lewis, William Ray, A.B., A.M.....	Boulder
Friends University, 1910.	
History.	
McDonald, Phillip Bayaud, B.S., E.M.....	Gouverneur, New York
Michigan College of Mines, 1910.	
English Literature.	
McFarland, Mary Virginia, A.B.....	Brighton
University of Colorado, 1915.	
Philosophy.	
McGrath, Ellert Lewis, B.S.....	Berkeley, California
University of California, 1915.	
Philosophy, Sociology, Education.	
Macy, Icle Gertrude, A.B., B.S.....	Gallatin, Missouri
Central College, 1914; University of Chicago, 1916.	
Biochemistry, Physiology.	
Mann, Clair Victor, B.S. (C.E.).....	Boulder
University of Colorado, 1914.	
Economics, Sociology, Municipal Engineering.	
Meents, Frieda, A.B.....	Boulder
University of Colorado, 1916.	
Germanic Languages.	
Perusse, Francis Joseph, B.Sc.....	Boulder
University of Nebraska, 1914.	
Mineralogy, Chemistry.	
Prouty, Frank Harrison, B.S. (C.E.).....	Pueblo
University of Colorado, 1915.	
Civil Engineering.	
Reed, Edward Looman, A.B.....	College Station, Texas
Oklahoma State Baptist College.	
Botany, Zoology, Chemistry.	
Rholl, Arthur Helmer, A.B.....	Fertile, Minnesota
Red Wing Seminary, 1915.	
Germanic Languages, English Language.	
Rice, Newton John, A.B.....	Pierce, Nebraska
Bellevue College, 1908.	
Education, Biology.	
Roe, Glenwood Coblentz, A.B.....	Boulder
University of Colorado, 1917.	
Zoology, Physiography.	
Ryan, William Joseph.....	Boulder
Anatomy.	
Saunders, George Jason, A.B.....	Los Angeles, California
University of Colorado, 1915.	
Education, Economics, Sociology.	
Scott, John Terrell, A.B., A.M.....	Lynchburg, Virginia
Randolph-Macon, 1914; Harvard University, 1915.	
Zoology.	
Shelledy, Ruth Marguerite, A.B., A.M.....	Boulder
University of Colorado, 1910, 1912.	
Germanic Languages.	
Slye, Florence Mary, A.B.....	Boulder
University of Colorado, 1907.	
History, Economics.	
Smith, Bryant, A.B., LL.B.....	Boulder
Guilford College, 1913; University of Colorado, 1916.	
History.	

NAME	RESIDENCE
Smith, Esther, A.B.....	Crete, Nebraska
Doane College, 1914.	
	English Literature, Music.
Snyder, May, A.B.....	Colorado Springs
Colorado College, 1915.	
	Romance Languages, Latin.
Underhill, Olive Lorena, Ph.B., A.M.....	Pueblo
University of Chicago, 1909; University of Colorado, 1912.	
	Sociology.
Unseld, George Peterkin, A.B.....	Westminster
University of Colorado, 1916.	
	Mathematics, Physics.
Van Valkenburgh, Horace Bulle, B.S., M.S.....	Boulder
University of Arkansas, 1905, 1912.	
	Chemistry, Physics.
Willison, George Findlay.....	Denver
	Political Science.

SCHOOL OF MEDICINE

FOURTH-YEAR CLASS

NAME	RESIDENCE
Baskin, Morris Jacob, A.B.	Denver
Cohenour, Leo Bertram, A.B.	Denver
Hurley, James Roy	Denver
Miller, Lewis Israel, A.B.	Denver
Printz, Morris, A.B.	Denver
Proffitt, Ray Verne	Boulder
Sutley, Margaret Ann Hutchinson, A.B.	Denver
Walker, Dora von Holdt, B.S.	Denver
Wolf, Julius Aaron, A.B.	Denver

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THIRD-YEAR CLASS

NAME	RESIDENCE
Bowes, William Joseph	Denver
Branham, Vernon C., A.M.	Denver
Day, Roy Joshua	Denver
Dewey, Edward Bradley	Denver
Faber, Edwin G.	Tyler, Texas
Graves, Herman Coddington, A.B.	Canon City
Gregg, Harold William, A.B.	Longmont
Guthrie, Robert Lee	Denver
Humphrys, Ethel Dare	Hooper
Humphrys, George Sinclair	Hooper
Katzman, Maurice	Denver
Kenagy, Fayre	Rupert, Idaho
Miller, Eli Abraham, A.B.	Denver
O'Donnell, Frederick Ross, A.B.	Ellsworth, Kansas
* Oliver, Rogers King	Denver
Price, Richard Craig, A.B.	Trinidad
Prien, Otto Louis, B.S.	Denver
Prien, Roland Henry	Denver
Smith, Willard Arthur	Denver
Taylor, Edward Earl	Pueblo
Walton, James Blaine	Denver
Weinfeld, Samuel	Denver

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SECOND-YEAR CLASS

NAME	RESIDENCE
Alcorn, Floyd Arthur	Boulder
Anderson, Cyrus Walfred	Denver
Bach, Walter Leo	Denver
Bailey, Bayard Melvin	Loveland
Brown, Philip Walling, A.B.	Colorado Springs
Cooper, Henry Lewis	Denver
Farrington, Paul Robert, A.B.	Boulder
Goldbloom, Isador	Denver
Harner, Clyde Ernest	Boulder
Heusinkveld, Gerrit	Boulder
Jaffa, Bertram Barr, A.B.	Roswell, New Mexico

* Died, December, 1917.

NAME	RESIDENCE
Johnson, Harry Arthur.....	Boulder
Kretschmer, Otto Sheibel, A.B.....	Boulder
Langdon, Erle Edward.....	Buena Vista
Luqueer, Fred Augustus.....	Olathe
McDonald, Roderick James, Jr.....	Leadville
Markel, Casper.....	Denver
Maul, Robert Franz.....	Boulder
Nairn, George Waverly.....	Boulder
Prinzing, Frederic Joseph.....	Boulder
Sears, Thaddeus Perce, A.B.....	Boulder

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FIRST-YEAR CLASS

NAME	RESIDENCE
Adams, Victor Kirk.....	Boulder
Barnard, Isham Hamilton.....	Fowler
Beacom, Dean Nolon.....	Boulder
Dwyer, Paul Keefe.....	Creede
Faus, Robert Bert.....	Boulder
Goldfain, Ephraim.....	Denver
Gregory, Greenough.....	Westminster
Greig, William McKean.....	Sterling
Harger, Chalmer Middlton.....	Topeka, Kansas
Hart, Verling Kersey.....	Cheyenne, Wyoming
Keim, Marie.....	Denver
Keyes, Homer Richards.....	Denver
Lewis, Robert Curtis, Ph.D.....	Boulder
Maynard, Donald Edmund.....	Boulder
Perkins, Earl James.....	Denver
Reed, Homer James.....	Boulder
Rosenbloem, Julius Lee.....	Denver
Ryan, William Joseph.....	Boulder
Seeberg, Abraham.....	Denver
Sells, Virgil Emerald.....	Denver
Swanson, Walfred William.....	Braham, Minnesota
Walsh, Walter Michael.....	Denver
Wear, Harry H.....	Meeker
Whitehead, Richard Wilson.....	Breckenridge
Yegge, William Bernard.....	Wiggins

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SPECIAL STUDENTS

NAME	RESIDENCE
Bunting, Helen Masters.....	St. Davids, Pennsylvania
Gruber, Charles Merl, Ph.D.....	Boulder

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SCHOOL OF LAW

THIRD-YEAR CLASS

NAME	RESIDENCE
* Atencio, José Andres, A.B.	Capulin
Fisher, Walter Edward	Aspen
Harris, Robert Fitton, A.B.	Boulder
Kelly, Will Abbott	Denver
Laird, Roy Hummel	Pueblo
Lewis, James David, A.B.	Niwot
McBride, Edward Henry	Boulder
McKissack, Harold David	Boulder
Rowland, Jay Miller	Boulder
Shattuck, Burtis Britan Hunt, A.B.	Boulder
Sherman, Henry Sterling, A.B.	Montrose
Sullivan, Mortimer Francis	Denver
Wallbank, Stanley Thomas, A.B.	Denver
Zimmerman, Frederick David	Carbondale

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SECOND-YEAR CLASS

NAME	RESIDENCE
Adams, Cecil Menefee	Boulder
Barnard, John Bell	Montrose
Deatherage, James Parker	Paonia
Donley, Maryelenore	Mt. Morrison
Galland, Benjamin Strauss, A.B.	Wilkes-Barre, Pennsylvania
Higgins, Thomas Edward, A.B.	Silverton
Parker, Carl Huntington	Boulder
Reynes, John Francis	Boulder
Tinglof, Birger Olaf Ostergrand	Boulder

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FIRST-YEAR CLASS

NAME	RESIDENCE
Adams, Charles Chenault	Boulder
Adams, Wilbur Wolf	Boulder
Brinkley, George Earl	Boulder
Carroll, William Francis	Colorado Springs
Grutter, Walter Luke	Boulder
Hurlburt, Helen Alverda	Fruita
Ireland, Gail Leonard	Hudson
Isbill, Albert Sydney	McGregor, Texas
Kochevar, Matthew John	Crested Butte
Morente, José	Philippine Islands
Pile, John Charles	Dodgeville, Wisconsin
Shaw, William Robert	Aspen
Sibbald, Reginald Spaulding	Boulder
Warrington, Jesse Gilbert, A.B.	Boulder

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SPECIAL STUDENTS

NAME	RESIDENCE
Bray, Ross	Boulder
Ford, Leland Frazier	Illioopolis, Illinois
McBride, John Cumming	Boulder
Stowe, Carl	Pueblo

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* Died November 15, 1917.

COLLEGE OF LIBERAL ARTS

SENIOR CLASS

NAME	RESIDENCE
Abrahamson, Mary Lovisa.....	Boulder
Adams, Reine Nellie	Olathe
Adams, Wilbur Wolf.....	Boulder
Allen, Charlotte Belle Spencer.....	Boulder
Anderson, Ruth Adelia.....	Pueblo
Andrews, Hazel Irene.....	Boulder
Atwood, Charlotte Frances	Boulder
Bailar, Sarah Frances.....	Salida
* Barrows, Dessie Robertson.....	Moscow, Idaho
Baum, Esther	Natoma, Kansas
Baumgartner, Hertha Alice	Boulder
Beresford, Howard Chester	Boulder
Brazil, Hazelle Ethelynn.....	Colorado Springs
Brinkley, George Earl.....	Boulder
Campbell, Ethel June.....	Boulder
Carruthers, Zilpha Mary.....	Denver
Dempsey, Florence Elizabeth.....	Boulder
Douds, Marian Anna.....	Denver
Duggan, Isabella Ivy.....	Boulder
Erickson, Lucile Olga	Des Moines, Iowa
Espinosa, Rosalina	Albuquerque, New Mexico
Greig, William McKean.....	Sterling
Grutter, Walter Luke.....	Boulder
Haass, Adalia	Niwot
Hagee, Gladys Rebecca.....	Denver
Hall, Ada Geneva.....	Fowler
Hall, Mary Stella.....	Boulder
Herman, Mildred	Boulder
Hoskins, Bertha Myra.....	Boulder
House, Floyd Nelson.....	Boulder
Howard, Helen Hunt.....	Rifle
Isbill, Albert Sydney.....	McGregor, Texas
Kistler, Ruth	Longmont
Kneale, Ada Florence.....	Boulder
Knisell, Katharine Rose.....	Denver
Lenz, Lorraine	Boulder
Lewis, Rachel	Boulder
Lundberg, Helen Maurine.....	Boulder
Luqueer, Fred Augustus.....	Olathe
McAndrew, Joseph Bernard.....	Boulder
McCormac, Jean Evelyn.....	Boulder
McNulty, Catherine Esther.....	Carbondale
MacDonald, Hazel Irene.....	Boulder
Marinoff, Oscar	Denver
Martin, Alice Herschel.....	Denver
Mead, Roger Bernard.....	Denver
Merrill, Louise A.....	Denver
Monical, Doska Wilhelmina Elizabeth.....	Pueblo
Mumma, Bertha Freeman.....	Boulder
Musser, Georgiebelles	Denver
Nairn, George Waverly.....	Boulder
Norvell, Philip David.....	Boulder

* Registered in 1916-1917, after the publication of the Catalogue.

NAME	RESIDENCE
Noxon, Edith Witcher.....	Boulder
Pehlstrom, Ruth Cymbeline.....	Boulder
Pehlstrom, Vera Esther.....	Boulder
Pile, John Charles.....	Dodgeville, Wisconsin
Proffitt, Hazel Mae.....	Boulder
Prouty, Julia Catherine.....	Denver
Pulliam, Artie Majors.....	Loveland
Red, Mary B.....	Boulder
Reed, Homer James.....	Boulder
Richardson, Helen Mary.....	Boulder
Riede, Anna Grace.....	Canon City
Roberts, Viola Marguerite.....	Boulder
Robinson, Alcyon.....	Denver
Roulston, Margaret Edna.....	Boulder
Ryan, William Joseph.....	Boulder
Shattuck, Rebekah.....	Boulder
Shaw, William Robert.....	Aspen
Sheldahl, Louis Rees.....	Buena Vista
Slane, Helen.....	Rocky Ford
Sutherland, Mae Elizabeth.....	Chandler, Arizona
Townsend, Onabelle.....	Boulder
Trovillion, Genevieve Karolyn.....	Boulder
Ware, Edith Martha.....	Salt Lake City, Utah
Webb, Helen Manker.....	Boulder
Welsh, Donald.....	Denver
West, Nellie Mirick.....	Pueblo
White, Winifred Harris.....	Boulder
Whitehead, Richard Wilson.....	Breckenridge
Willison, George Findlay.....	Denver
Wright, Gertrude Lucille.....	Grand Junction
Yeaman, Helen Mary.....	Trinidad

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JUNIOR CLASS

NAME	RESIDENCE
Ackerman, Lloyd.....	Boulder
Adams, Victor Kirk.....	Boulder
Anderson, Florence Marion.....	Denver
Arnold, George John.....	Boulder
Beacom, Dean Nolon.....	Boulder
Bevens, Iva Rae.....	Jennings, Michigan
Blackburn, Dorothy Redell.....	Boulder
Block, Ernestine Louise.....	Denver
Bonn, Dorothy Elizabeth.....	Canon City
Borden, Neil Hopper.....	Boulder
Borland, Eugene Woodburn.....	Wray
Bragdon, Warren Brooks.....	Colorado Springs
Breckenridge, Zella Elizabeth.....	Pueblo
Bryant, Carl.....	Worland, Wyoming
Buchanan, Lucile Berkeley.....	Denver
Buchheim, Walter August.....	Leonardville, Kansas
Burke, John Francis, Jr.....	Boulder
Carley, Meda.....	Cheyenne, Wyoming
Carmichael, Emmett Bryan.....	Boulder
Cashmore, Clair.....	Denver
Caufield, Kathleen.....	McGregor, Texas
Chisholm, Theodore Aeneas.....	Denver
Clarke, Francis Palmer.....	Boulder
Cleveland, Marjorie.....	Boulder
Cleveland, Nellie Charline.....	Boulder
Cluphf, Maud Mae.....	Boulder
Cohn, Regina Louise.....	Boulder
Collins, Melvin James.....	Creede
Cooke, Margaret Adah.....	Kankanna, Wisconsin

NAME	RESIDENCE
Creager, Nellie	Rocky Ford
Danielson, Ralph Wesley	Boulder
Deck, Jo	Boulder
Dinsmore, Sarah Elizabeth	Greenville, Texas
Dobbs, Louise Josephine	Beatrice, Nebraska
East, Bessie Belle	Trinidad
Eastman, Leslie	Boulder
Ellsberg, William Morris	Denver
Fairchild, Mattie Marie	Benton City, Missouri
Fitzgerald, Katherine Dorothy	Ogden, Utah
Fordham, Winifred Mae	Glenwood Springs
Godfrey, Marguerite Adkins	Denver
Goldbloom, Isador	Denver
Gore, Zoe	Breckenridge
Grigsby, Joseph Dewey	Wray
Haas, William David, Jr.	Alexandria, Louisiana
Hall, Lathrop Carleton	Boulder
Hand, Lauren Chatfield	Gypsum
Haring, Effie Pike	Boulder
Harrington, John	Cheyenne, Wyoming
Hendrickson, Victor James	Boulder
Hickey, Frank Meredith	Denver
Hicks, Dorothy Bertha	Denver
Hopkins, Faye Marie	Denver
Ireland, Gail Leonard	Hudson
Jenkins, Katherine	Denver
Johnson, Mabel Margaret	Longmont
Johnston, Ruth Mary	Idaho Springs
Jones, Marian Lucile	Fort Smith, Arkansas
Kappler, Edwin Otto	Denver
Keely, Thomas, Jr.	Denver
Kenning, Mary Cecilia	Manson, Iowa
Kinnison, Inez	Fort Collins
Kirkendall, Ruth Esther	Fruita
Knowlton, Donald Ryder	White Rock
Kuwer, Helen	Trinidad
Laird, Roy Hummel	Pueblo
Lind, Rose Matilda	Boulder
McGinnis, Paul	Boulder
McMillen, Mildred	Boulder
MacColl, LeRoy Archibald	Idaho Springs
Markey, Joseph James	Denver
Maxwell, Ucecil Seymour	Denver
Morley, Harold Thompson	Denver
Mulvihill, Harry Marcus	Denver
Mundell, Vada Edith	Fowler
Neely, Lenore Elizabeth	Boulder
Neill, Ella Marjorie	Greeley
Nelson, Margaret	Denver
Olinger, Elgin Dutton	Franklin, Illinois
Olson, Vera Anna	Boulder
Penney, George Benjamin	Pueblo
Pitkin, Amy	Denver
Pittman, Jo	Boulder
Prey, DuVal	Denver
Reed, Charles Emmett	Boulder
Reed, Irma Lenore	Jerome, Idaho
Reilly, Marie Agnella	Boulder
Rewalt, Alice Davidson	Ouray
Richards, Catherine Linnia	Hannibal, Missouri
Richardson, Robert Mark, Jr.	Boulder
Robertson, John Reuben	Bessemer, Alabama
Robinson, Carlton Crew	San Acacio
Rose, Lelia Mabel	Pueblo

NAME	RESIDENCE
vonRosenberg, Helen	Glenwood Springs
Sanger, Homer Festus.....	Boulder
Saunders, Ray Walter.....	Boulder
Schiller, Edna Elizabeth.....	Fort Morgan
Seeberg, Abraham	Denver
Shaw, Harriet Bliss.....	Cripple Creek
Sherman, Marguerite Elizabeth.....	Boulder
Simpson, Olive Margaret.....	Fowler
Sims, Irene Neill.....	Monte Vista
Snow, Prince William.....	Kewanee, Illinois
Southwell, Fred Bryan.....	Boulder
Swayne, Ida Loyd.....	Boulder
Swofford, Mary Elizabeth.....	Kansas City, Missouri
Thompson, Harold Clark.....	Greeley
Tufly, Arla Evangeline.....	Grand Junction
Vincent, Leona Elizabeth.....	Victor
Walter, Mary Ethyl.....	Pueblo
Webb, Charles Wilson.....	Denver
West, Frank Herschel.....	Pueblo
White, Laura Almira.....	Denver
Wilkin, Frank Josef.....	Denver
Williams, William McKinley.....	Elbert
Willison, Andrew Brunton.....	Denver
Willson, Kenneth Mack.....	Lusk, Wyoming
Witemyer, Florence Helen.....	Boulder
Wright, John Evan Miles.....	Boulder
Wright, Laurence Edward.....	Boulder
Wright, Quincy Lorenzo.....	Tennyson, Indiana
Writer, Jasper	Denver
Yegge, William Bernard.....	Wiggins

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SOPHOMORE CLASS

NAME	RESIDENCE
Adamson, Ruby Kendall [Home Econ.].....	Boulder
Amsbary, Katharine Eldridge.....	Delta
Andrew, Dorothy Turrell.....	Boulder
Atkins, Elmer Verdon.....	Longmont
Bailey, Blanche Grace.....	Boulder
Bair, Dorothy Helen.....	Denver
Baird, Charles Lafayette.....	Monte Vista
Bawden, Gertrude Burness.....	Boulder
Baxter, Gladys Elizabeth.....	Rocky Ford
Bell, Hazel Eulalia.....	Silverton
Bellman, Ruth	Boulder
Benz, Karl John.....	Denver
Bigham, Helen Gould.....	Glenwood Springs
Bimson, Edith Ellen.....	Berthoud
Bohn, Margaret May.....	Longmont
Bolles, Helen Louise.....	Denver
Boot, Helen Elizabeth [Home Econ.].....	Denver
Bowman, Janet Helen.....	Grayville, Illinois
Brace, Harriet Taylor.....	Boulder
Bradley, Melcena Verceda.....	Sedalia, Missouri
Breckenridge, Robert Glenn, Jr.....	Pueblo
Brown, Olive Rosamond.....	Louisville
Buchanan, Harriet Adele [Home Econ.].....	Sterling
Burke, Robert Emmet.....	Boulder
Burkholder, Clarence Dewey.....	Boulder
Campbell, Dorothy May.....	Denver
Campbell, Pearl	Loveland
Cassels, Samuel Jones	Montgomery, Alabama
Chamberlin, Louis Francis.....	Fort Collins
Chatfield, Elmina Dickinson.....	Littleton

NAME	RESIDENCE
Christensen, Clarence Melvin.....	Boulder
Christopher, Beulah	Wellington
Claer, Annett Doris.....	Colorado Springs
Claer, Felcita	Colorado Springs
Coakley, Harry Elmer.....	Denver
Colestock, Trilby Ruth	Hecla, South Dakota
Connell, Mary Ellen.....	Grand Valley
Cox, Harriette Agnes.....	Denver
Crawford, Lucil Sarah.....	Glenwood Springs
Crouch, Marjorie Schoppe.....	Fort Morgan
Curry, Margaret Eleanor.....	Boulder
Davis, Morris Edward.....	Cheyenne, Wyoming
Davis, William Powell.....	Sterling
Dawson, Geraldine	Denver
Denslow, Rachel Irene	Glen, Nebraska
Dickason, Deane Henry.....	Denver
Dimmitt, Harrison Steele.....	Denver
Donaldson, Frances	Fort Washakie, Wyoming
Donehue, Frances Selina.....	Denver
Downs, Doris	Boulder
Drach, Gertrude Magdalene.....	Denver
Duce, Katherine Frances.....	Boulder
Durward, Robert Harland.....	Boulder
Eaton, Phyllis Mary	Boulder
Ebert, Alice Ladd.....	Boulder
Eddy, Priscilla Henrietta.....	Boulder
Elias, Richard Ralph.....	Boulder
Elliott, Ruth	Merino
Engle, Arthur John.....	Wellington, Kansas
Fenton, Ward Caldwell.....	Rocky Ford
Ferguson, Alex McFarlane.....	Stranraer, Saskatchewan, Canada
Fleming, Helen Margarie.....	Denver
Fleming, Nancy Amelia.....	Boulder
Forsman, Hulda Hortense.....	Pueblo
Forsythe, Blanch Shirley	Boulder
Forsythe, Edith May.....	Boulder
Franklin, Alice Virginia.....	Colorado Springs
Frewen, Elizabeth Martha.....	Denver
Fulghum, Carl Whitney.....	Glenwood Springs
Ginther, Sarah	Denver
Glenn, Dorothea Reger.....	Denver
Goltry, Vernon LeRoy	Enid, Oklahoma
Goodrich, Blanche	Nelson, Nebraska
Grant, Kenneth Ernest.....	Leadville
Griffith, Helen Jessie.....	Denver
Hale, Marjory King.....	Denver
Hanger, Paul Cornelius.....	Colorado Springs
Harris, Mary Frances.....	Boulder
Hartman, Katherine	Longmont
Harvey, Edward Lee.....	Denver
Harvey, Effie Marie	Boulder
Haury, Gustav Adolph, Jr.....	Newton, Kansas
Hawkyard, Stella Grace.....	Olathe
Herzer, Minnie May	Boulder
Histed, Ruth	Boulder
Hitchcock, Porter Ackley.....	Pontiac, Michigan
Hoffman, James Robert.....	Littleton
Holcomb, Janet Lillian.....	Boulder
Holmes, Charles Martin.....	DeBeque
Holmes, Jessie	Greeley
Hopping, Marguerite Hall.....	Boulder
Howell, Homer Roberts	Trinidad
Hummel, Elizabeth Sophia.....	Boulder
Hunt, Faith Bennett.....	Pueblo

NAME	RESIDENCE
Husted, Helen May.....	Denver
Ingham, Arthur Woodward.....	Aspen
Johnson, Faith Winifred [Home Econ.].....	Denver
Kelly, William Andrew.....	Colorado Springs
Kiker, Sada.....	Boulder
Kistler, Georgie Aloise.....	Denver
Koenigs, Frank Jerome.....	Boulder
Larsen, Russell Conwell Alfred.....	Trinidad
Lavelle, Elizabeth Harry.....	Boulder
Lee, Anna.....	Denver
Lyman, Mildred Harriet.....	Boulder
Lyster, Elsie Muriel.....	Greeley
McCormac, Alice Irene.....	Boulder
McElhinny, Marion Elizabeth.....	Fairfield, Iowa
McFerson, Grant.....	Boulder
McGowan, Elizabeth Allen [Home Econ.].....	Boulder
McKay, Elizabeth Gleaning.....	Boulder
McKeon, Mary Irene.....	Newcastle, Wyoming
Macfarlane, Hattie Jean.....	Denver
Macgregor, Vanda Maud.....	Golden
MacRae, Catherine.....	Glenwood Springs
Mahoney, Louis Emmet.....	Boulder
Maier, Frank Julian.....	Rocky Ford
Marr, Mary Annette.....	Denver
Martin, Larissa Eugenia.....	Denver
Mason, Marian.....	Boulder
Matson, Jessie Agnes.....	Denver
Merrill, Helen.....	Lamar
Merryfield, Mabel Pearl.....	Boulder
Meyer, Freda Emma.....	Olathe
Michael, Maude Alice.....	Denver
Miles, Helen Dean.....	Denver
Mills, Glenn Everett.....	Boulder
Moulton, Venus.....	Raton, New Mexico
Murphy, John Russell.....	Hotchkiss
Murray, Paul Vincent.....	Denver
Myers, John Clark.....	Greeley
Nelson, George Richard.....	Denver
Nelson, Ruth.....	Delta
Noggle, Alva Robinson.....	Fort Morgan
O'Dea, Helen Louise.....	Leadville
Olds, Fred Hartman.....	Denver
Olson, Richard Gustave.....	Denver
O'Malia, Regina Catherine.....	Leadville
* Patterson, Lucy Mary.....	Fort Morgan
Perry, Benjamin Francis.....	Brighton
Peyton, Marguerite Shirley.....	Boulder
Powers, Nellie Sabena.....	Lafayette
Price, Mary Ellen.....	Cripple Creek
Purmort, Eunice Beryl.....	Boulder
Reed, Clair Mahon.....	Dallas, Texas
Reedy, Rachel Rankin.....	Boulder
Richey, Marie Jacquelyne.....	Leadville
Roberts, Doris.....	Denver
Royce, Lourie Merle.....	Boulder
Rush, William Shafter.....	Salida
Sammons, Charles McKinley.....	Denver
Sandhouse, Grace Adelbert.....	Boulder
Schaffer, Herold Morritz.....	Rochester, New York
Schaper, Robert Henry.....	Boulder
Scheidegger, Lloyd Wesley.....	Fort Morgan
Schweppe, Lucille Evelyn.....	Boulder

* Died December 5, 1917.

NAME	RESIDENCE
Selvy, Laura Etta.....	Grandview, New Mexico
Shannon, Marie Katherine.....	Denver
Shattuck, Henrietta.....	Boulder
Sheadle, Gertrude Steele.....	Rochelle, Illinois
Sills, Carlton Thomas.....	Gunnison
Skiff, Marjorie.....	Boulder
Skinner, Mary Elizabeth.....	Chicago, Illinois
Slane, Ruth.....	Saguache
Sloan, Helen Roberta.....	Durango
Smercheck, Bernice Grace.....	Boulder
Smith, Edmund Geoffrey.....	Denver
Smith, Marion Louise.....	Du Quoin, Illinois
Snider, James Birch.....	Denver
Spencer, Edith Pearl Conger.....	Boulder
Spencer, Floyd Albert.....	Boulder
Sullivan, Mary Theresa.....	Boulder
Sweet, Irena Elladee.....	Boulder
Tarkoff, Irma.....	Boulder
Terwilliger, Mary Elizabeth [Home Econ.].....	Boulder
Tippett, Donald Harvey.....	Boulder
Traxler, Ralph Newton.....	Lamar
True, Margaret Josephine.....	Saguache
Updike, Mary Ella.....	Trenton, New Jersey
VanDeventer, Albert Gale.....	Loveland
VanZant, Helen Marie.....	Longmont
Vowell, Catherine Elizabeth.....	Littleton
Watt, Marion Virginia.....	Denver
Webster, Irma Mae.....	Elbridge, New York
Westinghouse, Clarence Donald.....	Colorado Springs
White, Helen.....	Boulder
White, Helen Maud.....	Denver
White, James Herschel.....	Detroit, Michigan
White, Vivian.....	Boulder
White, Wilford Lenfestey.....	Boulder
Wiesman, Harry Bernhardt.....	Denver
Wiggins, Loretta Seattle.....	Boulder
Wild, Leila Belle.....	Moran, Texas
Wilson, Jean Hill.....	Boulder
Winter, Henry Abraham, Jr.....	Denver
Wittemyer, John.....	Boulder
Wolf, Thomas Olin.....	Boulder
Wood, Armilda Jane.....	Fowler
Woolard, Edgar William.....	Boulder
Work, Dorcas Logan.....	Pueblo
Wray, Ralph Merritt.....	Olathe
Wright, Agnes Mack.....	Boulder
Yant, Florence Gail.....	La Junta
Ziesel, Lora Celista.....	Boulder
Zimmerman, Earl Henry.....	Weitzer

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FRESHMAN CLASS

NAME	RESIDENCE
Adams, Frank Charles.....	Denver
Adams, Jane.....	Boulder
Adams, Marvyn Smith.....	Denver
Adolph, Jacob.....	Greeley
Akers, Byron Lionel.....	Denver
Alenius, Alfchild Margaret.....	Denver
Allison, Orpah Jane.....	Paonia
Anderson, Eugene Newton.....	Hubbard, Texas
Anderson, Georgia Christina [Home Econ.].....	Denver
Anderson, Hazel Beatrice.....	Pueblo
Andrew, Warren Melvin.....	Boulder

NAME	RESIDENCE
Babcock, Helen Gould.....	MacGregor
Babcock, Mary Eudora.....	Trinidad
Bailey, Mariam.....	Boulder
Baker, Leona Julia.....	Boulder
Barnhart, Lucy Persis.....	Denver
Barnie, Carl Alexander.....	Hotchkiss
Barrett, Almira.....	Denver
Barrett, Hugh Edwards.....	Denver
Barrett, Josephine Rose.....	Boulder
Bartlett, Eva Hulings.....	Longmont
Bates, Wallace Latimer.....	Pueblo
Baxter, Alfred Whitcomb.....	Longmont
Beale, Claire Jewell.....	Boulder
Beck, Teresa Fredrica.....	Pueblo
Bell, Alice.....	Denver
Bell, Rodney Stanford.....	Glenwood Springs
Benson, Lillian Elvira.....	Boulder
Berkheimer, Harry Allen.....	Malvern, Iowa
Birnbaum, Harold Fischlowitz.....	Denver
Bishop, Frank Dewey.....	Denver
Bitner, Katherine Harriett.....	Boulder
Blackburn, Lois Delight.....	Boulder
Blosser, Iva Caroline [Home Econ.].....	Boulder
Bolles, Esther Janet.....	Denver
Boulware, Lois.....	Fooosland, Illinois
Bowler, Mary Angela.....	Denver
Brazil, Lenore.....	Colorado Springs
Breyfogle, Louise Amy.....	Canadian, Texas
Briggs, Clark William.....	Denver
Brown, Dorothy.....	Pueblo
Brown, Jacob Josephus.....	Boulder
Brown, Paul.....	La Junta
Bruce, Caroline Ann.....	Delta
Brunner, Clara Una.....	Highland, Illinois
Buchanan, Helen Virginia.....	Sedgwick
Buerger, Julius Albert.....	Denver
Bunyan, Mary Frances.....	Berthoud
Burgess, Charlotte Hollingsworth.....	Boulder
Burk, Georgina Meyer.....	Allentown, New Jersey
Burrows, Alice.....	Denver
Bush, Ellis.....	Washington, Indiana
Bushey, Ray Allen.....	Lamar
Buens, Paul Genoe.....	Shreveport, Louisiana
Campbell, Harte.....	Georgetown
Campiglia, Anthony, Jr.....	Denver
Canter, Mary Elizabeth.....	Aurora
Carlson, William Ferdinand.....	Canon City
Carter, Esther Marian.....	Garden City, Kansas
Cartwright, George Dewey.....	Santa Fe, New Mexico
Catchpole, Gladys Moxie.....	Pagosa Springs
Caufield, Lillian.....	McGregor, Texas
Cawood, Vera Edna.....	Boulder
Cawood, Verne Carroll.....	Boulder
Chamberlain, Allen Gunnison, Jr.....	Denver
Chapman, John Arthur.....	Denver
Chapman, Sara.....	Monte Vista
Charter, Wilma.....	Loveland
Chase, Kate Thompson.....	Denver
Cheedle, Roxana.....	Grand Junction
Clark, Andrew Giles.....	Boulder
Class, Boyd Charles.....	Brighton
Cluphf, Lulu Belle.....	Boulder
Coates, Elizabeth Lola [Home Econ.].....	Lamar
Coates, John Eastman, Jr.....	Little Rock, Arkansas

NAME	RESIDENCE
Cobbey, Lillian West.....	Denver
Cochran, Grace Marie.....	Broomfield
Cole, Rilla Carol.....	Denver
Collins, Lucile Esther.....	Blanca
Collins, Norma Dorothy.....	Gunnison
Conley, Violetta.....	Lafayette
Connor, Howard Marcus.....	Denver
Corliss, Grace Luella [Home Econ.].....	St. James, Minnesota
Costello, Marguerite Marie.....	Denver
Craig, Elberta Louise.....	Boulder
Curtis, Ralph George.....	Saguache
Dawkins, Bernice Margaret.....	Augusta, Illinois
Deane, Daniel Richard.....	Boulder
Deidesheimer, Marguerite.....	Denver
Denton, Laura Edna.....	Boulder
Denton, Llewellyn.....	Boulder
DeRose, Howard Robert.....	Boulder
Devalon, George Clarence.....	Golden
Dever, John Lawrence.....	Denver
Dickson, Cyril Porter.....	Fowler
Dobbs, Hugh Justin, Jr.....	Beatrice, Nebraska
Dodson, Maude Marie.....	Durango
Dole, Mary Ellen.....	Akron
Donley, Margaret Irene.....	Denver
Douglas, Frederic Huntington.....	Evergreen
Downing, Richard Edmund.....	Denver
Doyle, Helen Marie.....	Carbondale
Duggan, Helen Gordon.....	Denver
Duke, Jean.....	Hotchkiss
Dunning, Marguerite.....	Logan, Kansas
DuPrau, Eunice Alice.....	Ouray
Dutcher, Donald Grant.....	Niagara Falls, New York
Dwyer, Emmet Vincent.....	Creede
Easton, Evan Luther.....	Meeker
Eberenz, Jessie Brown.....	Pueblo
Edwards, Eunice Vaughn.....	Victor
Eikenberry, Mary.....	Paonia
Elofson, Oliver Wesley.....	Salida
Estrin, Morris Moses.....	Denver
Evans, Matilda Hedges.....	Denver
Evans, Naomi Ruth.....	Boulder
Eynon, Clarence.....	Durango
Fahnestock, Ann.....	Denver
Farney, Freda Josephine.....	Denver
Ferkel, Ruth Laura.....	Canon City
Ferris, Willa Ferne.....	Denver
Fisher, William Davis.....	Denver
Flower, Harry James.....	Boulder
Gertsen, Elizabeth.....	Boulder
Giffin, Luman Cushman.....	Boulder
Gilford, Lee William.....	Cheyenne, Wyoming
Gillett, Ivan Parkin.....	Cleveland, Oklahoma
Gilpatrick, Hortense Robinson.....	Denver
Gittner, Wilma.....	Denver
Gladden, Ira Edgar.....	Raton, Texas
Gorce, Lila May.....	Boulder
Goudie, Jessie Mae.....	Denver
Gross, Marie Louise.....	Boulder
Grutzmacher, Margaret Dorothy.....	Blackhawk
Guard, Marion Raymond.....	Denver
Guggenheim, Bernece Ullman [Home Econ.].....	Denver
Hall, Ellis Azelle.....	Boulder
Hall, Emilie Elizabeth.....	Denver
Handy, Eleanor Dora.....	Denver

NAME	RESIDENCE
Harding, Roland Orlando.....	Buhl, Idaho
Hardy, Mary Madeline.....	Denver
Hargiss, Phyllis Virginia.....	Wiggins
Harmon, Nelle Ann.....	Lafayette
Hatter, Marie Victoria.....	Denver
Havens, George Douglass.....	Denver
Head, Elsie Thelma.....	Denver
Heilman, Arthur Grant.....	Monte Vista
Henry, Mary Houston.....	Pueblo
Hirst, Georgia La Fontaine.....	Cheyenne, Wyoming
Hodge, Fleeta Clarissa.....	Boulder
Hodge, Inez Fae.....	Boulder
Hopkins, Gladys.....	Denver
Huff, Marion Morehouse.....	Detroit, Michigan
Hughes, Sarah Ellen.....	Boulder
Humphreys, Moreland Mason.....	Denver
Hunter, James Walton.....	Fruita
Hurley, Mike, Jr.....	Laurens, Iowa
Jennerich, Geneva.....	Brighton
Johnson, Inez Hester.....	Denver
Johnson, Walter Willard.....	Greeley
Jolly, Blanche.....	Clarkdale, Arizona
Jones, Daniel Sherman, Jr.....	Center
Jones, Ella Mae.....	Center
Jones, Margaret Ruth.....	Littleton
Kasten, Madge Elizabeth.....	La Junta
Katz, Sarah Ruth.....	Denver
Kenning, Mabel Leone.....	Fonda, Iowa
Killgore, Anthony Jay.....	Denver
Kincaid, Laura Kornelya.....	La Veta
King, Florence Eltza.....	Boulder
Kline, William Wallace.....	Denver
Kneale, William Christian.....	Boulder
Knox, Margaret Matilda.....	Denver
Kohl, Evelyn.....	Denver
Ladd, Stanley Marvin.....	Denver
LaGrange, Mark Dean, Jr.....	Meeker
Lamborn, Chester Arthur.....	Denver
Langley, Luverne Gove.....	Denver
Lavington, Charles Stephen.....	Flagler
Lawton, Margaret.....	Colorado Springs
Lazonby, Virginia.....	Kansas City, Missouri
Ledesma, Teodorico.....	Philippine Islands
Lee, Samuel Morris.....	Fort Morgan
LeMay, Vera.....	Canon City
Leonhardy, Adela Viola.....	Fruita
Lester, Katherine Wheeler.....	Boulder
LeVeque, Earl Mehlum.....	Boulder
Lilly, Evelyn Idonia.....	Cripple Creek
Lindberg, Eugene Theodore.....	Pueblo
Linsley, Elizabeth Anna.....	Boulder
Logan, Mary Phyeliss.....	Denver
Lomax, Florence Louise.....	Boulder
Loser, Julia Elizabeth.....	Denver
Lovelace, Stuart Harris.....	Boulder
McColm, Glenn.....	Denver
McCune, Clara Marie.....	Platteville
McGovern, Cornelius James.....	Pueblo
McGrew, Martha Judkins.....	Denver
McInnes, Donald.....	Boulder
McKelvy, Laurence Joseph.....	La Junta
McKinley, Carl Dewey.....	Ault
McLucas, Mary McRae.....	Boulder
McNeece, Anna.....	Leadville

NAME	RESIDENCE
MacArthur, Emma Glen.....	Monte Vista
Macfarlane, Anna May.....	Coalmont
Macomb, Richard Callen.....	Durango
Madden, Louis Edward.....	Denver
Malm, John Chester.....	Westminster
Marker, Nathan Dewey.....	La Veta
Marmon, Asa Eldon.....	Boulder
Maroney, Larry.....	Denver
Martindell, Jackson.....	Denver
Martinez, José Eliseo.....	Trinidad
Mathers, Caress Mae.....	Boulder
Matthews, Ruth Estelle.....	Manzanola
Matty, Joseph H., Jr.....	Denver
Mealey, Bryan Jennings.....	Wray
Mentgen, Frances Marguerite.....	Sterling
Middlekauff, Donald Frank.....	Boulder
Miles, Mabel Clarke.....	Denver
Miller, Clyde William.....	Brighton
Miller, Israel.....	Denver
Mitterwallner, Merwin.....	Denver
Mogge, John Harry.....	Denver
Mohr, Carroll Shonord.....	Boulder
Moncrieff, James Elwood.....	Boulder
Moore, Ame Ruth.....	Aspen
Moore, Grace Josephine.....	Salida
Moulton, Elizabeth Gammill.....	Clifton
Musser, John McCoy.....	Denver
Naylor, Herbert Charles.....	Denver
Nelson, Ellen Marie.....	Denver
Nelson, Lila Marie.....	Leadville
Nelson, Lloyd Vernon.....	Claude, Texas
Ness, Ragnar John.....	Denver
Newell, George Lina.....	Buena Vista
Nichols, Lottie Irene.....	Ault
Nichols, Pearl Vallie.....	Victor
Nicholson, Coralie Rozelle.....	Denver
Nordstrom, Ida.....	Grand Valley
Norton, Alice Magnolia.....	Fort Logan
Noxon, Frances Clare.....	Boulder
O'Day, George William.....	Lafayette
Oldenburg, Ray William.....	Glenwood Springs
Parker, Barbara Fuller [Home Econ.].....	Boulder
Parker, Charline.....	Denver
Parks, Lucille Aleda.....	Pueblo
Parsell, Bertha May.....	Canadian, Texas
Pate, Richard Ellsworth, Jr.....	Denver
Patton, Lucia Cassell.....	Denver
Patton, Marshall Davis.....	Boulder
Pelta, Harold Earl.....	Cripple Creek
Perine, Helen.....	Denver
Peterson, Herman Carl.....	Cripple Creek
Phelps, Horace Ferguson.....	Denver
Phillips, Ray Marvin.....	Denver
Phillips, Roy Arvin.....	Denver
Pierson, Grace A.....	Sutherland, Nebraska
Powell, Mary Elisabeth.....	Las Animas
Price, Cecil Bradford.....	Denver
Purcell, Margaret Mary.....	Grand Junction
Putcamp, Anna Elizabeth.....	Denver
Pyle, Clark W.....	Boulder
Radetsky, Harvey Darrell.....	Denver
Radetsky, Meldon.....	Denver
Reardon, Raymond Francis.....	Denver
Reed, Melvin Isaac.....	Pueblo
Regan, John Lester.....	Creede

NAME	RESIDENCE
Rethlefsen, Helen Marie.....	Boulder
Reynolds, Henry Etta Gold.....	Boulder
Reynolds, Ruth Eleanor.....	La Junta
Rhode, Hazel Gertrude.....	Randolph, Iowa
Richardson, Charleen Dale.....	Denver
Rickelton, Howard Anderson.....	Olathe
Riley, Stanley Campbell.....	Greeley
Ripperton, Ruth.....	Denver
Robinson, Clarence William.....	San Acacio
Robinson, Warren Alfred.....	Idaho Springs
Rogers, Dorothy Agnes.....	Denver
Rosner, David.....	Boulder
Samuelson, Carl Edward.....	Las Animas
Sanborn, Louise Caroline.....	Denver
Savage, Frances [Home Econ.].....	Boulder
Savage, Raymond James.....	Denver
Scheck, Mary Augusta.....	Olathe
Schmid, Norman Charles.....	Denver
Schwabe, Edward Ludwig.....	Buffalo, New York
Scott, Blanche Altha.....	Boulder
Seavy, Vasco Gerald.....	Sterling
Sells, Chester Bernard.....	Denver
Sethman, Harvey Thurston.....	Denver
Sherman, George Raymond.....	Boulder
Sherrill, Lena Patricia.....	Denver
Shoaf, Dorothy Noyes.....	Taylor, Texas
Short, Edna Louise.....	Denver
Simon, John Dewey.....	Florence
Simpson, Frances.....	Fowler
Smith, Esther.....	Florence
Smith, Lorena Faye [Home Econ.].....	Boulder
Smith, Margaret Virginia.....	Grand Junction
Solt, Leland.....	Denver
Spencer, Richard Carleton.....	Boulder
Spratlen, Frank Penn.....	Denver
Springer, Mary Ruth [Home Econ.].....	Gilman City, Missouri
Squier, Raymond R.....	Longmont
Stailley, Victor O.....	Denver
Starr, Lucile [Home Econ.].....	Fowler
Steadman, William Errol.....	Denver
Stearns, Joel Wilder, Jr.....	Denver
Stein, Jennings.....	Fort Smith, Arkansas
Stephenson, Elmer Byron.....	Denver
Stewart, Rita Fae [Home Econ.].....	Boulder
Strange, Helen Amella.....	Boulder
Stultz, Charlotte C.....	Denver
Summerville, Thompson Ellsworth, Jr.....	Riversburg, Pennsylvania
Sumners, William Glenn.....	Denver
Swanson, Arveda Katharine.....	Georgetown
Talbott, Margaret Anne.....	Pueblo
Tanner, John Porter.....	Owensboro, Kentucky
Tarkoff, Harry.....	Boulder
Taylor, Overton Hume.....	Boulder
Thompson, Eldridge Cummings.....	Las Animas
Thompson, Lester Emmitt.....	Hugo
Thompson, Warren Osborne.....	Boulder
Thronrdson, Oscar Adolph.....	Longmont
Tisdell, Bertram Boyd.....	Greeley
Twombly, Lena Marie.....	Fort Lupton
Vagnino, Louis Salvatore.....	Denver
Vance, Inez Lillian.....	Sheridan, Wyoming
VanVoorhis, Elizabeth Wilhelmina.....	Arvada
Vawter, Viola.....	Fowler
Viecelli, James Dominic.....	Sopris
Wahlberg, Edgar Malcom.....	Denver

NAME	RESIDENCE
Walker, Charles Marian.....	Canon City
Walker, Mary Eugenia.....	Boulder
Walter, Emily Josephine.....	Denver
Ward, Thomas	Denver
Watson, Bess	Eaton
Wellman, Gussie	Boulder
Wellman, Harry	Boulder
Whitaker, Horace Baird.....	Shelbyville, Illinois
White, Mary Virginia.....	Denver
Whitney, Caroline Elizabeth.....	Boulder
Williams, Addison Leclercq.....	Denver
Williams, Beatrice Emily.....	Denver
Williams, James Reid.....	Yampa
Willson, Fred Brooks.....	Lusk, Wyoming
Wilson, Jeremiah Morrow.....	Denver
Wood, Edward Langstrath.....	Denver
Woods, Gladys Margaret.....	Pueblo
Woodward, Gretta Lucetta.....	Trinidad
Wright, Clara Williamson.....	Denver
Young, Mildred Arline.....	Boulder
Zarit, John Isadore.....	Denver

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SPECIAL STUDENTS

NAME	RESIDENCE
Black, Grace Ramsay [Home Econ.].....	Mendota, Illinois
Bramlage, Evan David.....	Brush
Branham, Sara Elizabeth.....	Atlanta, Georgia
Burnett, Roy Egbert.....	Goodnight, Texas
Cook, Nina Belle.....	Omaha, Nebraska
Deavenport, John Alexander.....	Boulder
DeMotte, Oliver	Boulder
Foster, Embree Hiller.....	Boulder
Holmes, David Hull.....	Boulder
Jones, Leonard	Boulder
Kiker, Grace, A.B. [Home Econ.].....	Boulder
Klein, Kurt Karl.....	Buffalo, New York
Kline, Bertha, A.B.....	Ithaca, New York
McElroy, Nelle Rowley, M.D.....	Boulder
McKenzie, Pearl Garnett, A.B.....	Ruston, Louisiana
Mason, William Eugene, A.M.....	Denver
Musselman, Rosetta D. Y.....	Boulder
Ray, Zella Dawson.....	Manitou
Rose, Walter Eugene.....	Boulder
Tegarden, Stella Isabel.....	Muncie, Indiana
Tesche, Leo Mortimer.....	Boulder
Thews, Edmund Richard.....	Boulder
Thompson, Clara Gussefeld.....	Boulder
Tigay, Bessie	Denver
Tinsley, Joseph E.....	Boulder

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COLLEGE OF ENGINEERING

SENIOR CLASS

NAME	COURSE	RESIDENCE
Allen, Everett Wait.....	M.E.	Kalona, Iowa
Anderson, Joseph Nathaniel.....	C.E.	Denver
Aulsebrook, William John.....	E.E.	Elbert
Black, Paul Ashby.....	E.E.	Rocky Ford
Boase, Arthur James.....	C.E.	Boulder
Boylan, James Philip.....	C.E.	Denver
Brown, Charles Matthew.....	C.E.	Denver
Brubaker, William Felker.....	C.E.	Boulder
Burlingame, Charles Raymond.....	M.E.	Denver
Catlett, Robert Larkin.....	E.E.	Trinidad
Croft, Huber Ogilvie.....	M.E.	Denver
Devalon, Earle Waldo.....	E.E.	Golden
Eckel, Raymond Earl.....	C.E.	Denver
Eddy, Philip Eugene.....	M.E.	Boulder
Ellison, Murl J.....	E.E.	Crook
Elzl, Joseph Andrew.....	E.E.	Boulder
Flanagan, Victor Evans.....	E.E.	Canon City
Flint, Harry Milton.....	Ch.E.	Boulder
Fraser, Percy Verness.....	E.E.	Boulder
Gittings, William Norton.....	E.E.	Rifle
Greenawalt, Arlo Cornell.....	Ch.E.	Denver
Hinkley, Tracy Luther.....	Ch.E.	Sterling
Hum, Justus Clifford.....	C.E.	Boulder
Johnson, Levant.....	M.E.	Georgetown
Leppla, Walter John.....	M.E.	Denver
Loper, William Bryan.....	E.E.	Montrose
Love, Harry Allan.....	E.E.	Mt. Harris
Merritt, Charles Wendell.....	E.E.	Denver
Merritt, Robert Wendell.....	E.E.	Denver
Morrow, Walter Thomson.....	C.E.	Colorado Springs
Murphy, James Malcolm.....	M.E.	Clifton
Neuman, Robert, Jr.....	E.E.	Victor
Pierce, Charles Brown.....	E.E.	Denver
Randall, John Dudley.....	M.E.	Boulder
Rifkin, Meyer.....	C.E.	Denver
Roloson, Glenn Bruno.....	E.E.	Boulder
Schloss, Charles Murdock.....	E.E.	Woodville, Mississippi
Sears, Harold Thompson.....	M.E.	Boulder
Thomas, Edwin Abbott.....	E.E.	Denver
Thorpe, John George.....	E.E.	Boulder
Titely, Thomas Tracy.....	E.E.	Denver

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JUNIOR CLASS

NAME	COURSE	RESIDENCE
Anderson, Albert Severin.....	E.E.	Denver
Barr, Harold Alfred.....	C.E.	La Junta
Barrett, Willis Chapel.....	C.E.	Sheridan, Wyoming
Belser, Carl.....	Ch.E.	Boulder
Blake, Albyn Bernard.....	Ch.E.	Denver
Burghardt, King.....	C.E.	Denver
Campbell, Ernest Glenn.....	Ch.E.	Boulder
Canis, Frank Herald.....	C.E.	Longmont
Casey, Robert.....	Ch.E.	Boulder
Costello, George Francis.....	Ch.E.	Denver

NAME	COURSE	RESIDENCE
Coulson, Donald Chaney.....	Ch.E.	Durango
Counts, Hilda	E.E.	Boulder
Dobbins, Eugene Victor.....	Ch.E.	Denver
Duggan, Harold Charles.....	M.E.	Denver
Dunlap, Paul Meredith.....	C.E.	Kalona, Iowa
Eastman, Harold Lee.....	M.E.	Boulder
Easton, Frank Artemus.....	E.E.	Denver
Eaves, Elsie	C.E.	Idaho Springs
Elliott, John Paul.....	C.E.	Boulder
Froese, Erhard Albert.....	Ch.E.	La Junta
Gillett, Clarence Herbert.....	Ch.E.	Denver
Gray, Wharton Kinsey.....	M.E.	Denver
Hamilton, Robert Fox.....	M.E.	Denver
Harlin, Eugene Lorraine.....	E.E.	West Plains, Missouri
Harmon, Earl Leonard.....	C.E.	Lafayette
Hedgcock, Wendell Thomas.....	C.E.	Denver
Hoffman, Roy August.....	E.E.	Denver
Holm, Alvin John.....	Ch.E.	Denver
Kelsey, Harold Martin.....	E.E.	Denver
Killian, George Leslie.....	E.E.	Denver
Lawrence, Wylie Earl.....	Ch.E.	Boulder
Lee, William Russell.....	E.E.	Lamar
Lendecke, Hugo Maria Robert.....	C.E.	Georgetown
Lindsay, James Armour.....	Ch.E.	Denver
Macken, John Emmett.....	E.E.	Denver
Malixi, Juan	C.E.	Philippine Islands
Manning, Arthur Edmund.....	E.E.	Denver
Matthews, Thomas Ignatius.....	E.E.	Denver
Mechling, Eugene Burlingame.....	E.E.	Denver
Mellet, Will Wood.....	Ch.E.	Boulder
Nock, Henry Thomas.....	Ch.E.	Denver
Nord, Arthur William.....	E.E.	Salida
Olson, Louis Bernhardt.....	Ch.E.	Boulder
Orris, James Ralston.....	Ch.E.	Pueblo
Oviatt, Edward William.....	C.E.	Loveland
Page, Henry Anthony.....	E.E.	Denver
Pinger, Allen Wainwright.....	M.E.	Leadville
Pratt, Stuart Wilkins.....	Ch.E.	Boulder
Sanders, Forest Wayne.....	Ch.E.	Durango
Skinker, Murray Fontaine.....	E.E.	Denver
Vicklund, Claude Alven.....	M.E.	Denver
Vicklund, Enoch Rhinehart.....	M.E.	Denver
Whitney, Earle Sproate.....	Ch.E.	Rollinsville
Whitney, Russell Lee.....	E.E.	Boulder
Woodworth, Dean Thorpe.....	Ch.E.	Custer, South Dakota
Young, Benjamin Uel.....	E.E.	Evans

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SOPHOMORE CLASS

NAME	COURSE	RESIDENCE
Alford, Reuel Stillman.....	E.E.	Castle Rock
Allen, Harold	C.E.	Cripple Creek
Babcock, Jasper Dwight, Jr.....	E.E.	MacGregor
Baker, Gano Reeder.....	M.E.	Denver
Ball, Wright Owings.....	C.E.	Meeker
Bartlett, Earl Alfred.....	C.E.	Denver
Blom, Max	E.E.	Colorado Springs
Brickham, Nelson Henry.....	M.E.	Denver
Brickler, Alexander Jesse.....	M.E.	Denver
Brinkley, Bert	Ch.E.	Estes Park
Brock, Jesse Raymond.....	E.E.	Kimberly, Idaho
Burk, Harold DeWitt.....	Ch.E.	Boulder
Burkhard, Myron Joseph.....	Ch.E.	Florence

NAME	COURSE	RESIDENCE
Carpenter, Edwin Gilbert.....	C.E.	Mancos
Caughey, Clarence Harold.....	M.E.	Boulder
Chandler, Harold William.....	M.E.	Denver
Clarke, Thomas Howard, Jr.....	E.E.	Silverton
Crispelle, Kenneth Guy.....	E.E.	Leadville
Degering, Carl Adolph.....	E.E.	Florence
DeSellem, George Wesley.....	E.E.	Denver
Dougherty, Vivian Channing.....	M.E.	Salida
Elder, Andrew Darwin.....	Ch.E.	Denver
Espinosa, Gilberto Antonio.....	C.E.	Boulder
Farrar, Clyde Leo.....	E.E.	Myrtle Creek, Oregon
Foulk, Theodore Marlowe.....	E.E.	Denver
Franklin, Walter Byron.....	M.E.	Fort Collins
Gothberg, Edwin George.....	E.E.	Casper, Wyoming
Grove, Arthur Edwin.....	Ch.E.	Grand Junction
Hadley, Ralph Harold.....	E.E.	El Paso, Texas
Haffey, Patrick Joseph.....	Ch.E.	Durango
Hansen, Arnold Adolph.....	E.E.	Denver
Harshman, Frank.....	C.E.	Wiggins
Havens, George Douglass.....	Ch.E.	Denver
Herman, Harry Henry.....	M.E.	Boulder
Hill, Ralph Marcus Douglas.....	M.E.	Albuquerque, New Mexico
Iverson, Conrad Marcellus.....	M.E.	Longmont
Jewett, John Quincy.....	C.E.	Denver
Jones, Edward Maurice.....	Ch.E.	Rockvale
Kelley, Francis Joseph.....	Ch.E.	Leadville
Kelty, William Francis.....	E.E.	Denver
Klemme, Claude Chase.....	C.E.	Boulder
Kretschmer, Charles, Jr.....	E.E.	Pueblo
Lall, Anthony.....	E.E.	Louisville
Leach, Joe Robert.....	E.E.	Boulder
Lillie, Charles William.....	E.E.	Denver
Lind, Raymond William.....	C.E.	Denver
McNerny, Townsend.....	Ch.E.	Denver
Major, William Dewey.....	M.E.	Telluride
Melton, Lou Alta.....	C.E.	Boulder
Merrill, Richard Lee.....	Ch.E.	Lamar
Morehouse, Harry Clearance.....	M.E.	Denver
Morrison, Richard Sykes.....	C.E.	Denver
Murray, Lee James.....	E.E.	Denver
Patterson, Ernest George.....	Ch.E.	Fort Morgan
Peterson, Charles William.....	E.E.	Denver
Poteet, James Harold.....	C.E.	Denver
Pott, Louis Morgan.....	Ch.E.	Leadville
Rice, Harold Frederick.....	E.E.	Ouray
Ross, Walter David.....	Ch.E.	Boulder
Sanders, Vernon Heber.....	Ch.E.	Durango
Saunders, Pascho Bushnell.....	E.E.	Boulder
Scudder, Felix Ward.....	E.E.	Denver
Sellers, Jesse Earl.....	Ch.E.	Boulder
Smith, Terryl Clarence.....	E.E.	Boulder
Stone, Caleb.....	C.E.	Denver
Stubbs, Frank Whitworth, Jr.....	C.E.	Ridgway
Sumner, George Ellsworth.....	E.E.	Greeley
Taylor, Robert Hugh.....	M.E.	Denver
Trowbridge, Roland Orrison.....	Ch.E.	Leadville
Vincent, John Thomas.....	E.E.	Victor
Wilcox, Joseph Ashley.....	Ch.E.	Hesperus
Wilson, Emory Kossuth.....	M.E.	Denver
Wolff, Hiram Bradley.....	Ch.E.	Denver
Wylam, Clarence Chamberlain.....	M.E.	Boulder

FRESHMAN CLASS*

NAME	RESIDENCE
Alexander, Harold Everett.....	Castle Rock
Allen, Harold Joseph.....	Denver
Altvater, Herbert George.....	Denver
Anderson, David Frank.....	Collbran
Anderson, Glenn Willard.....	Denver
Bacon, Francis Gilbert.....	Boulder
Baum, Arthur William.....	Fowler
Beckham, Charles William.....	Canon City
Belcher, Lynn Long.....	Pueblo
Bergman, Harry.....	Leadville
Blakeslee, Sherley.....	Riverton, Wyoming
Bondoc, Hilario Gonzales.....	Philippine Islands
Bongera, Bert.....	Trinidad
Brown, Clayton Hague.....	Colorado Springs
Brown, James Schuyler.....	Denver
Buck, Arnold Friederich.....	Denver
Bunting, Joseph William.....	Lafayette
Burroughs, Earl Rollo.....	Denver
Byers, George Washington.....	Brighton
Campiglia, Eugene John.....	Denver
Card, Lawrence Baker.....	Denver
Cartwright, George Dewey.....	Santa Fe, New Mexico
Chapman, John Arthur.....	Denver
Cohig, James Fanning.....	Denver
Commons, John Pinkerton.....	Waldron, Arkansas
Crawford, Samuel Calhoun.....	Denver
Crowley, Corydon Henry.....	Boulder
Davis, Frank Burr.....	Greeley
Dickason, Gray David.....	Denver
Dickson, Bennett.....	Fowler
Doud, Arthur M.....	Silverton
Dunstone, Arnold Edward.....	Black Hawk
Edison, Elmer Raynold.....	Lafayette
Eisenstein, Joe Abraham.....	Denver
Everingim, Charles Stanley.....	Denver
Farmer, Robert Ashbrook.....	Denver
Feldman, Merrick Rogers.....	Denver
Fertig, Wendell Welby.....	La Junta
Field, John Thomas.....	Denver
Fisher, Merton Raymond.....	Wellmon, Iowa
Freeman, Tom Thompson.....	Denver
Ginsborg, Harry.....	Denver
Godfrey, Allen Robert.....	Greeley
Goldblatt, Meyer.....	Denver
Greenlee, William David.....	Colorado Springs
Hale, George Newton.....	Florence
Hall, James Lester.....	Moffat
Harrington, Leo Matthew.....	Durango
Harry, John.....	Canon City
Heacock, Lester Payson.....	Montrose
Henderson, Clyde Patterson.....	Denver
Hendrick, Roy Wesley.....	Boulder
House, Cadwell Burl.....	Boulder
House, Cecil Pennington.....	Boulder
Hovlid, Alvah Martin.....	Longmont
Inman, Brayton James.....	Boulder
Irion, James Robert.....	Denver
Jennings, Frank Albert.....	Pueblo
Jewett, Harry Eugene.....	Aspen
Johnson, Carl Harold.....	Boulder
Johnson, Jerome McKinley.....	Gunnison
Kennedy, Joseph Merle.....	Okmulgee, Oklahoma

* Freshman Engineering students are not classified as to course.

NAME	RESIDENCE
Kerr, Clarence Leroy.....	Globe, Arizona
Koenig, Ralph Albert.....	Loveland
Koernig, Raymond Chandler.....	Denver
Kohler, Frederick William, Jr.....	Boulder
Lane, Warren F.....	Grand Junction
Leigh, Haslett B.....	Burley, Idaho
Liggett, Hubert Benjamin.....	Denver
Lindsley, Frank Arthur.....	Boulder
McFarlane, Frank Lloyd.....	Denver
McLean, Kenneth Golson.....	Leadville
McNerny, Clyde Freeling.....	Denver
Merritt, Howard Thomas.....	Denver
Meyer, Harry.....	Denver
Miller, Hyman Paul.....	Denver
Monesmith, Erle Richard.....	Trinidad
Moss, Kendall Frank.....	Denver
Musgrave, Ervin Roy.....	Longmont
Nix, Whitfield.....	Florence
O'Kelly, Francis Cornelius.....	Telluride
Oliver, Chester Brownley.....	Boulder
Olson, Arvid John.....	Denver
Pease, Clarence Olaf.....	Westminster
Phillips, Lawrence Emmert.....	Rockvale
Porter, Russell Wolcott.....	Carthage, Missouri
Price, Julius F.....	McCook, Nebraska
Radetsky, Harvey Darrell.....	Denver
Reed, Edward Walker.....	Denver
Rixford, Charles Orville.....	Denver
Robertson, John, Jr.....	Pueblo
Robertson, Oscar Lofton.....	Denver
Russell, Robert John.....	Denver
Sappenfield, Franklin Oscar.....	Golden
Schmid, Norman Charles.....	Denver
Schrepferman, Chester Montgomery.....	Denver
Seeburg, Clarence Howard.....	Boulder
Seyler, Paul Kruger.....	Denver
Smith, Donald E.....	Fowler
Smith, Dudley Hamner.....	Aspen
Smith, McLane, Jr.....	Boulder
Solomon, Jacob Morris.....	Boulder
Staton, Hyrcanus Ivan.....	Carbondale
Stearns, Joel Wilder, Jr.....	Denver
Stewart, Jackson Magnus.....	Loveland
Stiefel, Alfred Carl.....	Denver
Suess, Willard Frederick.....	Denver
Vail, Kenyon Colyar.....	Denver
Vastine, Marvin William.....	Fowler
Wadley, Frederick Hinsdale.....	Denver
Wall, Harold Francis.....	Denver
Walsh, Timothy Everett.....	Canon City
Westfield, Walter Burns.....	Denver
Weaver, Russell Lee.....	Austin
Weiss, Adolph.....	Denver
Whiteaker, George Henry.....	Simla
Wickhorst, Fred Daniel.....	Brighton
Wigginton, Frank Clark.....	Denver
Wynn, John Frederick.....	Durango
Zimmerli, Emil Walter.....	Denver

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SPECIAL STUDENTS

NAME	RESIDENCE
Ball, James Ogden.....	Crested Butte
DuBois, William Culbertson.....	Boulder
Duce, Harold Taylor.....	Boulder
Wolf, Frank.....	Boulder

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COLLEGE OF PHARMACY

FOURTH-YEAR CLASS

NAME	RESIDENCE
Bechmann, Agnes Pauline, Ph.C.....	Creede —1

THIRD-YEAR CLASS

NAME	RESIDENCE
Romano, Anthony Clement.....	Louisville
Scott, Everett Lee, Ph.C.....	Lipscomb, Texas —2

SECOND-YEAR CLASS

NAME	RESIDENCE
Feldman, Pincus	Denver
Judelovitz, Simon	Denver
Sanders, Joseph	Primghar, Iowa —3

FIRST-YEAR CLASS

NAME	RESIDENCE
Armstrong, Elma Lavenia.....	Grand Junction
Caywood, Rodney James.....	Nederland
Dyche, Edward	Pueblo
Jaquiss, Hazel Dell.....	Paonia
Johnson, Jerome McKinley.....	Gunnison
Killebrew, Clair William.....	Fort Morgan
Kirby, Carolyn Marie.....	Boulder
Myers, Helen May.....	Monte Vista
Norton, Donald Hobrough.....	Elgin, Illinois
O'Brien, Faye Frances.....	Dawson, New Mexico
Praschek, Joseph Henry.....	Del Norte
Swisher, Margaret Catherine.....	Hotchkiss
Weyand, Esther Lucille.....	Glenwood Springs —13

SPECIAL STUDENTS

NAME	RESIDENCE
Burgman, Emily Mae.....	Ignacio
Ryden, Frederick William.....	Creede —2

TRAINING SCHOOL FOR NURSES

THIRD-YEAR CLASS

NAME	RESIDENCE
Abel, Fern Viola.....	Sheridan, Wyoming
Anderson, Grace Caroline.....	Boulder
Glover, Isabel Eliza.....	Aurora, Nebraska
Milburn, Cecile Anna.....	Grover

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SECOND-YEAR CLASS

NAME	RESIDENCE
Abbett, Nellie Blanch.....	Brighton
Carter, Sue	Coffey, Missouri
Detweiler, Hallie Mae.....	Limon
Guthrie, Florence Lu Ella.....	Clay Center, Kansas
Heckman, Anna	Grand Junction
Hopfinger, Eva Bertha.....	Leadville
Richburg, Lilla	Winnsboro, Texas
Williams, Alna	Cripple Creek

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FIRST-YEAR CLASS

NAME	RESIDENCE
Barnsley, Geneva	Longmont
Bullington, Alice May.....	Colona
Cummings, Lillian	Boulder
Dodson, Frances Willard.....	Durango
Gibbens, Dorothy Madelyn.....	Fowler
Jacobsen, Gerda Marie.....	Fowler
Rohwer, Hester Marian.....	Boulder

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SUMMER SESSION STUDENTS, 1917

NAME	RESIDENCE
Abrahamson, Mary	Boulder
Adams, Frances Helen, A.B.	Fort Collins
Adams, Olive Elizabeth	Ferris, Texas
Addison, Katherine	Salina, Kansas
Alexander, Amelia Sarah	Flagler
Allen, Anna Wioatte	Bunkie, Louisiana
Allen, Mary, B.S.	Bunkie, Louisiana
Allen, Mollie B.	Kansas City, Missouri
Allen, Octavia Pearce	Bunkie, Louisiana
Allison, Corinne	St. Joseph, Missouri
Alphin, Verne	Hutchinson, Kansas
Alsop, Inez Gertrude, B.S.	Wakefield, Kansas
Anderson, Olive Elizabeth	Salina, Kansas
Anderson, Sophie, B.Ped.	Roswell, New Mexico
Andrews, Edna	Fayette, Missouri
Andrews, Joseph Oscar	Fort Worth, Texas
Appel, Laura Matilda	Pittsburgh, Pennsylvania
Armitage, Flora	Little Rock, Arkansas
Axe, Esther	Corning, Kansas
Bacon, Dorothy Louise	Boulder
Baird, Cud Thomas, Jr.	El Paso, Texas
Ball, Mary Ethel, A.B.	Boulder
Barker, Grace	Kansas City, Missouri
Barnett, Abraham	Boulder
Barnett, Beryl	Oklahoma City, Oklahoma
Barnett, Ella	Boulder
Barnett, Mary, Pd.B.	Vernal, Utah
Barrett, David Dean, A.B.	Boulder
Barton, John Allen	Belton, Texas
Barton, Lessie Louise	Belton, Texas
Bassler, Emma Alene	Stillwater, Oklahoma
Baumgartner, Erich	Boulder
Baxter, Ethel Celene	Kinsley, Kansas
Beacom, Dean Nolon	Boulder
Beahm, Samuel Ernest, B.E.	Santa Fe, New Mexico
Beard, Harry Randall, A.B.	Denver
Beebe, Elinor Lee, A.B.	Wichita, Kansas
Beem, Blake	Little Rock, Arkansas
Beeson, Ethel, B.S.	Meridian, Mississippi
Beeson, Frances Hunt, A.B., B.Mus.	Roswell, New Mexico
Bejach, Maurice Dilliard	Memphis, Tennessee
Belmar, Gertrude, Pd.B.	Bayfield
Belser, Mary Ernestine	Boulder
Benfer, Mabel Christiana, Pd.B.	Raton, New Mexico
Bennett, Rama Virginia	Boulder
Bentley, Jean Eliza, B.S.	Cripple Creek
Berg, Emma	Fruita
Berg, Louise Marie, A.B.	Aspen
Bevens, Iva Rae	Jennings, Michigan
Beyler, Cecelia M.	Moab, Utah
Bicknell, Adelaide Lorinda	Omaha, Nebraska
Bicknell, Helen Chase	Omaha, Nebraska
Billings, Mary Abby	Boulder
Birdick, Arthur Alman	Boulder
Birdick, Hettie Phillips	Merino
Bishop, Erma Rosaline, A.B.	Pennsboro, Missouri
Bishop, Margaret, A.B.	Pennsboro, Missouri
Black, Agnes Amalie	Green Bay, Wisconsin

NAME	RESIDENCE
Black, Eva May.....	Carterville, Missouri
Black, Mary Catherine.....	Green Bay, Wisconsin
Black, Ruby Aurora.....	Thornton, Texas
Blades, Bertha.....	Tulsa, Oklahoma
Blake, Albyn Bernard.....	Denver
Blayney, Ivy, A.B.....	Monmouth, Illinois
Block, Ernestine Louise.....	Denver
Blosser, Iva Caroline.....	Boulder
Bolan, Beatrice.....	Dorchester, Massachusetts
Bolen, Emma Elizabeth.....	St. Joseph, Missouri
Bolinger, Ursie.....	Shreveport, Louisiana
Bonjour, Faye.....	Onaga, Kansas
Bovard, Alice.....	Kansas City, Missouri
Bowman, George Yency.....	Paducah, Texas
Boyle, James Philip.....	San Benito, Texas
Brace, Harriet Taylor.....	Boulder
Brace, Letitia Austin, A.B.....	Boulder
Eradbury, Ora, A.B.....	Onawa, Iowa
Bradford, Hattie Cary.....	Oklahoma City, Oklahoma
Bradley, Marian.....	Peabody, Kansas
Brady, Emille C.....	Waxahachie, Texas
Brainerd, Helen Louise, Ph.B.....	Chicago, Illinois
Brandon, Ora Lee, B.O.....	Throck Morton, Texas
Branham, Sara Elizabeth, A.B.....	Atlanta, Georgia
Brannen, Bertie D.....	Duncan, Arizona
Brannen, Richmond E.....	Duncan, Arizona
Brown, Aline.....	St. Joseph, Missouri
Brown, Esther.....	Lecompte, Louisiana
Brown, Katherine.....	McGregor, Texas
Brown, Mae.....	Lecompte, Louisiana
Brown, Marie Alice Crum, A.B.....	Carterville, Missouri
Brown, Porter.....	McGregor, Texas
Bruce, Laura.....	De Temiak Springs, Florida
Brush, Grace Lorene.....	Tulsa, Oklahoma
Buchanan, Lucile Berkeley, Pd.B.....	Denver
Buckland, Clara Elizabeth.....	Hutchinson, Kansas
Buckland, Ethel.....	Waterloo, Iowa
Buckner, Sue Elizabeth, A.B.....	Wichita, Kansas
Buerkin, Katherine.....	Quincy, Illinois
Bullen, Benjamin Talmadge, A.B.....	Salina, Kansas
Buller, Jacob P., A.M.....	Henderson, Nebraska
Burchfiel, Gavetia.....	Anthony, Kansas
Burk, Phyllis Clarke.....	Boulder
Burke, Ruth Genevieve, A.B.....	Boulder
Burnett, Myrtle Clara.....	Glasco, Kansas
Burnham, Grace Emma, A.B.....	Boulder
Burwell, Blair, Jr.....	Denver
Butler, Harriet Louise.....	Buffalo, New York
Butler, Marie.....	Avon, Illinois
Byrd, Minnie May, A.B.....	Corsicana, Texas
Byrkit, Ruth McClain, A.B.....	Indianapolis, Indiana
Caldwell, Nannie, L.B.....	Corpus Christi, Texas
Campbell, Ethel June.....	Boulder
Campbell, Lloyd Hubbard, A.B.....	Boulder
Cantrell, Georgia Edith.....	Butler, Missouri
Carmichael, Emmett Bryan.....	Stratton
Carpenter, Florence Ryan.....	Girard, Kansas
Carson, Ada Stuart.....	Glendale, Arizona
Carson, Rhoda Mae.....	Ponca City, Oklahoma
Casey, Eleanore Susan, A.B.....	Boulder
Casey, Robert.....	Boulder
Caufield, Kathleen, A.B.....	McGregor, Texas
Caufield, Lillian.....	McGregor, Texas
Cauthorn, Edward Beauford, B.S. in C.E., B.S. in Ed.....	Dallas, Texas
Cavanaugh, Ruth.....	Dighton, Kansas

NAME	RESIDENCE
Chambers, Alice O., A.B.	West Point, Nebraska
Chambers, Bird	Humboldt, Kansas
Chambers, Mary Ann	West Point, Nebraska
Champion, Gertrude Turner	Fort Smith, Arkansas
Chaney, Elizabeth, B.S.	Montrose
Chao, Yuan Chen	Golden
Chase, Florence Pearl, A.B.	Walsenburg
Childress, Othello Raymond	Granbury, Texas
Christopher, Willie Mae, A.B.	Abilene, Texas
Church, Catherine	Cowgill, Missouri
Clafin, Sue Esther, A.B.	Atlanta, Georgia
Clark, Grace Edith, A.B.	Denver
Clark, Luella M.	Kansas City, Missouri
Clarke, Francis Palmer	Denver
Claybaugh, Stella, Pd.B.	Montrose
Clinton, Walton	Tulsa, Oklahoma
Clouse, Eleanor G.	Dormont, Pennsylvania
Cluphf, Maud Mae	Boulder
Cochran, Sarah Lavinia	Pittsburgh, Pennsylvania
Cockerill, Cecil, A.M.	Booneville, Missouri
Coleman, Clara Eleanor	St. Louis, Missouri
Coleman, Jessie Hester, A.M.	Oskaloosa, Iowa
Collins, Rose Alice	Maryville, Missouri
Conklin, Frances	Hutchinson, Kansas
Conklin, Virginia	Hutchinson, Kansas
Conrad, Alma Bertha	Altamont, Illinois
Cook, Mary Frances, B.L.	Marianna, Arkansas
Cook, Roxy	Hatch, New Mexico
Cooke, Adeline, A.B.	Kankanna, Wisconsin
Cooke, Maude	Anthony, Kansas
Coolidge, Effie	Sheridan, Wyoming
Corley, Gertrude	Shawnee, Oklahoma
Cornell, Benjamin David, A.B.	Colorado Springs
Costello, George Francis	Denver
Council, Amy	Holdrege, Nebraska
Counts, Hilda, A.B.	Boulder
Counts, Oakley Ford	Boulder
Cowles, Ina Foote, B.S.	Lawrence, Kansas
Craig, Lulu Alice	St. Joseph, Missouri
Crawford, Cora Shults	Beaumont, Texas
Crawford, Pearl	Corpus Christi, Texas
Criner, Fava Marie	McPherson, Kansas
Crothers, Margaret Adair	Natchez, Mississippi
Cunningham, Fan Hicks	Sedalia, Missouri
Curry, Katherine	Salina, Kansas
Dalton, Grace Eads, A.B.	Kansas City, Missouri
Daniel, Aria, B.Pd.	Maysville, Missouri
Darrow, Lemuel De Witt, A.M.; LL.B.	Kansas City, Missouri
Davis, Eunice Hope	Montgomery, Missouri
Davis, Jessie Anne, A.B.	Fort Collins
Davis, Maude Bennett	Waxahachie, Texas
Davis, Nina	Mangum, Oklahoma
Dawley, William H., Jr., A.B.	Kansas City, Missouri
Day, Mary Sarilda	Boulder
Deck, Jo	Boulder
DeMotte, Mary Inez	Boulder
DeMotte, Oliver	Boulder
Dempsey, Florence Elizabeth	Boulder
Dennison, Alice Emma	Omaha, Nebraska
Denny, Rachel, A.A.	Fayette, Missouri
De Vorss, Kara	Kansas City, Missouri
Dickens, Cleda Margaret	Du Quoin, Illinois
Dimmitt, Dorothy Margaret	Wymore, Nebraska
Dinsmore, Sarah Elizabeth	Greenville, Texas
Dixon, Flora Ethel	Hutchinson, Kansas

NAME	RESIDENCE
Dixon, Gladys Moore, A.B.	Hereford, Texas
Dixon, Nellie Dee.	Hutchinson, Kansas
Doggett, Rachel, A.B.	McKinney, Texas
Dome, Helen Elizabeth.	Little Rock, Arkansas
Doney, Ida B.	Milwaukee, Wisconsin
Donley, William Guy.	Shepherdstown, West Virginia
Dorton, Zella, A.B.	Murphysboro, Illinois
Downes, Anna.	St. Joseph, Missouri
Du Bose, Guerin.	Houston, Texas
Duncan, Elida.	Oktaha, Oklahoma
Duncan, Lulu Maude, A.B.	Beloit, Kansas
Duncan, Mabel, A.B.	Perry, Oklahoma
Dungan, Henrietta Grubb.	Boulder
Dunn, Clara Lois.	St. John, Kansas
Dunsmore, Mabel Frederica, A.B.	Denver
Durham, Fae.	Anthony, Kansas
Duty, Margie.	Lafayette, Louisiana
Duvall, Dollie, A.B.	Ponca City, Oklahoma
Duvall, Josephine, A.B.	Ponca City, Oklahoma
Dyckman, Ethel.	Larned, Kansas
Dysslin, Mable.	Fort Scott, Kansas
Eastland, Jeanne B.	Oklahoma City, Oklahoma
Eastman, Grace.	Hutchinson, Kansas
Ebert, Alice Ladd.	Boulder
Eckel, Ruth Elizabeth, A.B.	Boulder
Edwards, Jennie.	Kansas City, Missouri
Edwards, Margaret Eleanor, A.B.	Elyria, Ohio
Edwards, Vivian Wilhelmina.	Edwardsville, Illinois
Eiler, Margaret.	Kansas City, Missouri
Eisele, Nan Catherine.	Natchez, Mississippi
Ellison, Ethel Colin.	El Reno, Oklahoma
Elmore, Fawntine.	Trenton, Missouri
Elston, Bertha.	Kansas City, Missouri
Emmons, Mary Rosalie.	Tulsa, Oklahoma
Espinosa, Rosalina.	Boulder
Evans, Esther Sarah.	Pittsburgh, Pennsylvania
Ezell, Frances L.	Fallon, Nevada
Ezell, Nanah, A.A.	Fayette, Missouri
Farquhar, Carrie Alice.	Boulder
Farrington, Florence, A.M.	Boulder
Farrington, Paul Robert, A.B.	Boulder
Faus, Robert Bert.	Boulder
Faust, Louis Sanders.	Colorado Springs
Feingold, Marcus, M.D.	New Orleans, Louisiana
Felling, Mary E.	St. Joseph, Missouri
Ferguson, Jean May, Ph.B.	Chicago, Illinois
Finical, Nell.	Girard, Kansas
Fishback, Hallie, A.B.	Kingsville, Missouri
Fitzgerald, Katherine Dorothy.	Ogden, Utah
Flanders, Jean Lorraine.	Excelsior Springs, Missouri
Fleming, Arch I., A.B.	Perry, Oklahoma
Fleming, Zella.	Perry, Oklahoma
Fletcher, Lucy.	Waldo, Kansas
Flint, Harry Milton.	Boulder
Foote, Floy, A.B.	Loveland
Foreman, A. H., A.B.	Hannibal, Missouri
Forrester, Bessie Adele, B.Di.	Chicago, Illinois
Foster, Embree.	Boulder
Fox, Alberta, A.B.	Winterset, Iowa
Franklin, Daisy Ermin.	St. Joseph, Missouri
Friend, Corabelle.	Boulder
Fryer, Daisy Deane.	Windsor, Missouri
Fryer, Grace Margaret.	Windsor, Missouri
Fulkerson, Etta, A.M.	Dallas, Texas
Funican, Mary.	Greencastle, Indiana

NAME	RESIDENCE
Fuqua, Nolen Jones.....	Duncan, Oklahoma
Gage, Olive Ruth, B.S.....	LaCygne, Kansas
Gallagher, Margaret.....	West Point, Nebraska
Garbarino, Lucinda, A.M.....	Boulder
Gardiner, Irene.....	Grand Tower, Illinois
Garner, Della B.....	College Station, Texas
Gates, Gertrude Isabel, A.B.....	Lyons
Gelston, Almena M.....	Mt. Vernon, Iowa
Gigot, Mary Gelaine.....	Pierceville, Kansas
Gilday, Anna Catherine.....	Kansas City, Missouri
Gilday, Mary Agnes.....	Kansas City, Missouri
Gill, Florence Montgomery, A.B.....	Boulder
Glass, James LeRoy, A.B., A.M.....	Boulder
Glass, Kathryn.....	Eldorado, Texas
Goerz, Rudolph A.....	Newton, Kansas
Golden, Lulu Maria.....	St. Joseph, Missouri
Good, Alvin, A.B.....	Miltonvale, Kansas
Gookins, Robert Pierre.....	Loveland
Gordon, Hattie H.....	Kansas City, Missouri
Gorham, Lillie Pingry.....	Crystal Lake, Illinois
Graham, Anna Beryl.....	Boulder
Grant, Anna May, A.B.....	Boulder
Grant, Edgitha Midlonette, A.B.....	Flinthill, Missouri
Grauman, Lillie, A.B.....	Louisville, Kentucky
Graves, J. LeRoy.....	Hardtner, Kansas
Gray, Ethel Cooper.....	Chickasha, Oklahoma
Gray, Nellie.....	Higgins, Texas
Gray, Wharton Kinsey.....	Denver
Green, Bertha.....	Uvalde, Texas
Green, William Marvin.....	Fort Worth, Texas
Greene, Carl Osborne.....	Roaring Springs, Texas
Greene, Effie May.....	Sanger, Texas
Griffin, Reba, Pd.B.....	St. Joseph, Missouri
Grill, Helen Pauline.....	Boulder
Gross, Marie Louise.....	Boulder
Grotter, Walter Luke.....	Boulder
Gudmundsen, Gladys.....	Ord, Nebraska
Gudmundsen, Harriett.....	Ord, Nebraska
Hagman, Josephine Barbara, A.B.....	Boulder
Hale, Alice.....	Bedford, Iowa
Hall, Eberta.....	Denver
Hamilton, Alice.....	Anthony, Kansas
Hamilton, Joseph Nelson, A.B.....	Ponca City, Oklahoma
Hamilton, Lorene Kendall.....	Anthony, Kansas
Hanger, Paul Cornelius.....	Colorado Springs
Hankins, Dora.....	Sherwood, Texas
Hankins, Edward Alen.....	Sherwood, Texas
Hardin, Norman John.....	Duncan, Oklahoma
Harkins, Ina Mary.....	Topeka, Kansas
Harlin, Eugene Lorraine.....	West Plains, Missouri
Harman, Anna Margaret, A.B.....	Attica, Indiana
Harper, Mary.....	Robinson, Illinois
Hartford, May.....	Hutchinson, Kansas
Hartley, Grace, A.B.....	Gresham, Oregon
Harvey, Parnelle.....	Wauneta, Nebraska
Hawkins, Laura Belle, A.B.....	Maryville, Missouri
Hays, Arthur Bell.....	Stephenville, Texas
Hearn, Erma.....	St. John, Kansas
Heaton, Wilbur McKean, Ph.B.....	Pueblo
Heavenhill, Josephine, A.B.....	Winters, Texas
Helmick, John Nathaniel, A.B.....	Waynoka, Oklahoma
Henry, Kathryn, A.A.....	Columbia, Missouri
Henry, Stella Fay.....	Severy, Kansas
Herbster, Katherine.....	Pittsburgh, Pennsylvania
Herrlich, Suzanne Sue.....	Godfrey, Illinois

NAME	RESIDENCE
Hill, Ina Louise, Ph.B.	Fort Dodge, Iowa
Hill, Lavinia, B.S.	Oklahoma City, Oklahoma
Hilts, Mildred	Anthony, Kansas
Hinds, Isabella E.	Denver
Hinkley, Tracy Luther	Sterling
Histed, Ruth, Pd.B.	Denver
Hockaday, Margaret	Harrisonville, Missouri
Hodgkinson, Mary Elizabeth	Gainesville, Texas
Hogue, Nita	Paris, Texas
Holch, Arthur Everett, A.B.	Cripple Creek
Housel, Florence Irene, A.B.	Boulder
Howard, Harvey James, M.D.; A.M.	Boston, Massachusetts
Howard, Jessie Irving, A.B.	Boulder
Howe, William Warren, A.B.	Pueblo
Hubbard, Marguerite	Fort Smith, Arkansas
Hubbard, Minnie	Fort Smith, Arkansas
Huber, Walter Arthur	Scranton, Pennsylvania
Hufford, Charles Henry	Coleman, Texas
Humphrey, Anita Josephine	Chanute, Kansas
Humphrey, Margaret	Chanute, Kansas
Hunt, Ella Adeline	Boulder
Hunter, Grace Kirkendall	Boulder
Hutchison, Harriett	Fort Dodge, Iowa
Jackson, Julia A.	Tulsa, Oklahoma
Jarrell, Ada Joe	Temple, Texas
Jenkins, Annie Laurie	Oklahoma City, Oklahoma
Jennings, Winifred	Claremore, Oklahoma
Jensen, Minna	El Reno, Oklahoma
Jessup, Andrew Simes, A.B.	Central City
Jevons, Beulah Helen, B.S.	Wakefield, Kansas
Johnson, Hazel Meredith, A.B.	Lawton, Oklahoma
Johnson, Mabel Harriet	Dodge City, Kansas
Jones, Alta May	Alamosa
Jones, Olive May, A.B.	Boulder
Jordan, Rose	Spencer, Iowa
Jordan, Sara Marie, A.B.	Denver
Jorgensen, Nora	Ord, Nebraska
Jowers, Lucy	San Antonio, Texas
June, Perry Ellsworth, A.B.	Colorado Springs
Kalbfell, Dorothy M.	St. Louis, Missouri
Kane, Vesta	Greensburg, Kansas
Kaull, Erba Mona	Glen Elder, Kansas
Kaup, Mabel	Grand Junction
Kautter, Helen	Lafayette
Keal, Marie, A.B.	Hastings, Nebraska
Keeton, William Fount	Collinsville, Texas
Keim, Marie	Denver
Kellogg, Ernest Clinton, B.Sc.	Collegeview, Nebraska
Kelly, Bessie	Kansas City, Missouri
Kendall, Claribel, A.M.	Boulder
Kennedy, Clara Amanda	Trenton, Missouri
Kennedy, Ethel Ayleene	Trenton, Missouri
Kennerly, Mary D.	Gainesville, Texas
Kesner, Edgar, Ph.B.	Salida
Keyes, Homer Richards	Denver
Keys, Grace Mercedes	St. Joseph, Missouri
Keys, Menta May	St. Joseph, Missouri
Klamet, Anna	Tonganoxie, Kansas
Klock, Ada Mabel	Cheneyville, Louisiana
Kneale, Ada Florence	Boulder
Knight, Martineau, A.M.	Trenton, Missouri
Kohl, Rowena	Centralia, Illinois
Korns, Harriet Eugenia, A.B.	Grinnell, Iowa
Krauss, Norma	Pawnee, Oklahoma
Kretschmar, Arthur Herman	Boulder

NAME	RESIDENCE
Kretschmar, George Gustav.....	Boulder
Kurz, Martha.....	Bowling Green, Missouri
Laird, Fannie Jane.....	Boerne, Texas
Laird, Florella.....	Boerne, Texas
Lakin, Harvey Albert.....	Selbert
Landers, Joseph Samuel, A.B.....	Boulder
Lannan, Mary K.....	Topeka, Kansas
Lauck, Gertrude Louise.....	Berthoud
Laurent, Anita K.....	Topeka, Kansas
Laverty, Carmen.....	Burwell, Nebraska
Lawrence, Rose.....	Texarkana, Arkansas
Ledesma, Teodorico.....	Philippine Islands
Leeper, Grace Olive, A.B.....	Norman, Oklahoma
Lenz, Loraine.....	Boulder
Levings, William Stephen.....	Denver
Lewin, Lilybelle, A.B., B.E.....	Lindsborg, Kansas
Lewis, Margaret McDowell.....	Kansas City, Missouri
Lind, Raymond William.....	Denver
Livingston, Maud Campbell.....	Muskogee, Oklahoma
Lobsitz, Blanche, A.B.....	Perry, Oklahoma
Loftin, James Otis.....	San Antonio, Texas
Logasa, Hannah.....	Chicago, Illinois
Lomax, Gladys.....	St. Joseph, Missouri
Loomis, Russell Newton, B.S. (Phar.).....	Boulder
Lorance, Ruby Belle, Ph.B.....	Garden City, Kansas
Loveall, Hester Eleanor, A.B.....	Kansas City, Missouri
Lovelace, Ruth Bush, A.B.....	Boulder
Lowe, Frances.....	Nevada, Missouri
Lucas, Mary Rokes, Pd.B.....	Independence, Missouri
Luedeking, Louise.....	St. Louis, Missouri
Luethje, Alvina.....	Santa Fe, New Mexico
Lydick, Julia.....	Arkansas City, Kansas
Lynch, Percy Lee.....	Boulder
Lytle, Ruth Adrienne.....	Boulder
McAfee, Ralph Canfield, A.B.....	Boulder
McClure, Florence, A.B.....	Sulphur, Oklahoma
McConnaughay, Maude.....	St. John, Kansas
McCormac, Jean Evelyn.....	Boulder
McCosh, Eva May.....	Waterloo, Iowa
McCoy, Vera.....	Woonsocket, South Dakota
McCuskey, Mabel, A.B.....	Boulder
McDaniel, Bessie.....	Kansas City, Missouri
McDougal, Violet.....	Sapulpa, Oklahoma
McElhany, Margaret Mary.....	Omaha, Nebraska
McFerren, Della.....	Kansas City, Missouri
McGaughey, Merick Davis.....	Vena, Texas
McIlrath, Hannah, Ph.B.....	Grinnell, Iowa
McIver, Sally Margaret.....	Excelsior Springs, Missouri
McKnight, Della, A.B.....	Bradley, Arkansas
McLaughlin, Gertrude.....	McAlester, Oklahoma
McLean, Gladys Evans.....	Breckenridge
McMahon, Marjorie, A.B.....	Anthony, Kansas
McMillen, Bulah.....	Kansas City, Missouri
McWilliams, Elizabeth.....	Plattsburg, Missouri
MacKay, Mary.....	Boulder
MacKay, M. Catherine.....	Boulder
MacKenzie, Margaret Cameron.....	Agra, Kansas
Maclin, Charlie.....	Covington, Tennessee
Macy, Icie Gertrude, B.S.....	Gallatin, Missouri
Maddox, Edna Browning.....	Chickasha, Oklahoma
Makeever, Iva.....	Stromsburg, Nebraska
Malarkey, Wonda Alene, A.B.....	Cleveland, Oklahoma
Mann, Allie B., A.B.....	Atlanta, Georgia
Mann, Rubie.....	Jonesville, Michigan
Marsh, Annie.....	Paola, Kansas

NAME	RESIDENCE
Mayes, Lilla	West, Texas
Mayes, Tyty, A.B.	Brownwood, Texas
Medlock, Annie, A.B.	Arkadelphia, Arkansas
Melcher, Evelyn Geneva, A.B.	Butte, Montana
Meldrum, Carolyn	Cedar Vale, Kansas
Melton, Alabama Love	Fort Worth, Texas
Melton, Lula Amos	Fort Worth, Texas
Merrill, Louise A., B.Ped.	Denver
Merryfield, Esther Lynore, Pd.B.	Fowler
Meyer, Blanche	St. Joseph, Missouri
Meyer, Elsie Agnes	Flatwillow, Montana
Milbank, Elizabeth Palmer	Chillicothe, Missouri
Milbank, George Edward	Chillicothe, Missouri
Miller, Belle V., A.B.	Denver
Miller, Earle Brenneman, A.B.	Boulder
Miller, Edith Margaret	Murphysboro, Illinois
Miller, Etta Pearl	Blockton, Iowa
Miller, John H., A.B.	Boulder
Miller, Lorena	Lincoln, Nebraska
Miller, Louise Helene, A.B.	Piqua, Ohio
Miller, Lucille Dorothy	Aurora, Illinois
Miller, Marguerite	Pickens, Mississippi
Miller, Mayme	Drumright, Oklahoma
Mills, Emily, A.B.	Concordia, Kansas
Mitchell, Clara Augusta, A.B.	Booneville, Mississippi
Moffett, Laura Gertrude, A.B.	Bloomington, Nebraska
Montgomery, Effie Willard	Greenfield, Missouri
Montgomery, Elizabeth Clare	Bloomington, Nebraska
Moon, Etta C., Pd.B.	Bonne Terre, Missouri
Moore, Eola Mildred	Moab, Utah
Moore, Homer Thomas	Fort Worth, Texas
Moore, Milton Harvey	Fort Worth, Texas
Moore, Wilmie	Gardiner, Kansas
Morente, José	Philippine Islands
Morgan, Fred Buckner, A.B., B.S. in Ed.	Greeley
Morley, Harold Thompson	Denver
Morris, Ada, A.M.	Lineville, Iowa
Morris, Clara	El Reno, Oklahoma
Muller, Marie C., A.B.	Denver
Mumma, Bertha Freeman	Boulder
Murphy, Elizabeth Myers	Kansas City, Missouri
Murray, Laura	Kansas City, Missouri
Myers, Stella Evelyn, Ph.B.	Kansas City, Missouri
Nash, Mary	Cripple Creek
Naylor, Winifred Augusta	Niagara Falls, New York
Neale, Annie Garner, B.Pe.	Greenfield, Missouri
Nelson, Minnie Belle, B.L.	St. Joseph, Missouri
Nesbitt, Verne Kathryn	Pinckneyville, Illinois
Newell, Blanche, A.M.	Boulder
Newsome, Marie C.	Tonganoxie, Kansas
Newton, Kelvin, B.S.	Weir, Kansas
Noland, Sarah Harden	Jefferson City, Missouri
Norris, Gertrude Ellen, A.B.	La Salle
Norvell, Philip David	Hayden
Nygren, Monna	Arcadia, Nebraska
Oberman, Florence Marion	Aurora, Illinois
O'Brien, Lela Fern	Cloverdale, Indiana
O'Connor, Bess K.	Missouri Valley, Iowa
Ogden, Laura	Boulder
Ogg, Esther	Topeka, Kansas
Olney, Avery Fincher, A.M.	Lawrence, Kansas
Olson, Clifford Arnold	Winfield, Iowa
O'Neal, Virginia	Bay City, Texas
Osborne, Adele Baldwin	Wellington, Kansas
Osborne, Edna Pearle, A.M.	Lawrence, Kansas

NAME	RESIDENCE
Oswalt, Emma	Monroe, Louisiana
Ott, Edwin, A.M.	Sioux Falls, South Dakota
Page, Eva Marian	Des Moines, Iowa
Parker, Alice	Jefferson City, Missouri
Parker, Elsie G., B.S.	Oak Park, Illinois
Parker, Eva Josephine	Custer, Oklahoma
Parkhurst, Edith	Kinsley, Kansas
Parkhurst, Pauline, B.S.	Kinsley, Kansas
Parry, Marie	St. Joseph, Missouri
Patterson, Ernest George	Fort Morgan
Patterson, Hazel	Kansas City, Kansas
Patterson, Mary Ellen	Trenton, Tennessee
Patton, Edwin Fritz	Boulder
Patton, Rosamond Edith, A.B.	Goldhill
Patton, Ursula, A.M.	Boulder
Payne, Martha Carey, A.A.	Fayette, Missouri
Peak, Paul Reed	Denver
Pearsall, Deborah Olive, A.M.	Seattle, Washington
Peck, V. Grace	Huntley, Nebraska
Peel, Mary A., M.E.L.	San Marcos, Texas
Perkins, Earl James	Denver
Perry, Mabel Esther	Norton, Kansas
Petersen, Mollie	Boulder
Peterson, Alfred W.	Keene, Texas
Petrie, Helen Gertrude	St. Joseph, Missouri
Petty, Charles Odell, M.D.	Beaver Crossing, Nebraska
Phillips, Roy Arvin	Denver
Pickering, Leila	Galena, Kansas
Pierce, Minnie Josephine, B.S.	Oxford, Nebraska
Pingry, Mabel E.	Crystal Lake, Illinois
Pirtle, Ruth	Vernon, Texas
Pitts, Marjory	Hubbard, Texas
Plank, Celeste	St. Louis, Missouri
Pollock, Jennie Elizabeth	Fort Dodge, Iowa
Polster, Edna Rosina, A.B.	Warrenton, Missouri
Porter, Helen	Alma, Nebraska
Potter, Edna	Winston, Missouri
Powers, Jesse Lewis, A.B.	Stillwater, Oklahoma
Powers, Mabel, B.S.	Stillwater, Oklahoma
Pratt, Anna L., B.S.	Burlingame, Kansas
Pray, Cottie Loraine	Fort Smith, Arkansas
Pressley, Elizabeth	Des Moines, Iowa
Price, Ruth Mary	Topeka, Kansas
Price, Thearle	Muskogee, Oklahoma
Prien, Otto Louis, B.S.	Boulder
Purcell, Myrtle Adah	Denver
Rabb, Florrie	Roswell, New Mexico
Raine, Pearl L.	Denver
Rawlings, Louie M., A.B.	Sulphur, Oklahoma
Reardon, Mae, A.M.	Tonganoxie, Kansas
Red, Mary Bowers	Mexia, Texas
Red, William Stuart, Jr.	Mexia, Texas
Reece, Clara	St. Joseph, Missouri
Reed, Alma	Kansas City, Missouri
Reed, Charles Emmett	Boulder
Reed, Edward Looman, A.B.	College Station, Texas
Reilly, Marie Agnella	Boulder
Render, Katherine Merle, A.B.	Hamilton, Missouri
Renwick, Clara	Harrisonville, Missouri
Rice, Faye	Kansas City, Missouri
Richards, Anna Genera, A.B.	Toronto, Kansas
Richards, Sophia Ellen	Kansas City, Missouri
Richards, William Alfred, A.B.	Toronto, Kansas
Ritchey, Letha Mary	Stillwater, Oklahoma
Roark, Daniel Blythe, A.B.	Ferris, Texas

NAME	RESIDENCE
Roark, Iva Crouch.....	Ferris, Texas
Robbins, Jessie May, A.M.....	Denver
Robbins, Mary Elizabeth.....	Lakewood
Robidoux, Madeleine.....	Benkelman, Nebraska
Roberts, Viola Marguerite.....	Boulder
Robinson, Belle Hope, A.A.....	Columbia, Missouri
Robinson, Finis, Pd.B.....	Warrensburg, Missouri
Robinson, Gladys Evora.....	Denver
Robinson, Marie Downing.....	Columbia, Missouri
Rogers, Winifred.....	Du Quoin, Illinois
Rohde, Alvena.....	Beloit, Kansas
Rohde, Amanda Rhoda.....	Rock Rapids, Iowa
Rosenbach, Joseph Bernhardt, A.B.....	Albuquerque, New Mexico
Royce, Lourie Merle.....	Boulder
Rozell, Jennie, B.S.....	Indianola, Nebraska
Rudolph, Jennie Stark, A.B.....	Denver
Ruffin, Minnie Markette.....	Monroe, Louisiana
Russell, Carrie.....	Carterville, Illinois
Russell, Rosalie.....	Carterville, Illinois
Ryan, William Joseph.....	Boulder
Sage, Geneva Hall.....	Denver
Sain, Lydia, M.L.....	Neosha Falls, Kansas
Saltus, Charles Nathaniel, A.M.....	Sterling
Sanders, Joseph.....	Primghar, Iowa
Sanger, Homer Festus.....	Boulder
Saunders, Lee.....	Boulder
Scandrett, Hazel Viola, A.B.....	Liberal, Kansas
Schaffer, Herold Morritz.....	Rochester, New York
Schaper, Robert Henry.....	Havelock, Nebraska
Schellhase, D. Carrie.....	Trenton, Missouri
Schellhase, Dorothy.....	Trenton, Missouri
Schmaling, Rosa Margaret.....	Caliente, Nevada
Schultz, Carl Edward.....	Fort Collins
Schuyler, Clarissa H., B.S. in Ed.....	Oak Park, Illinois
Seeburg, Florence Helen.....	Boulder
Sellers, Annie Jane.....	Oklahoma City, Oklahoma
Sells, Virgil Emerald.....	Denver
Severin, Louise Mary.....	Kansas City, Missouri
Shafer, Ethel Helene.....	Moab, Utah
Shaw, Anne, A.B., B.S.....	Elsberry, Missouri
Shoaf, Dorothy Noyes.....	Taylor, Texas
Shoaf, Leonard.....	Taylor, Texas
Shuart, Rena Belle, A.B.....	Green Bay, Wisconsin
Shulters, Maude Alice, A.B.....	Boulder
Simmons, Manie Virginia, B.Pd.....	Boonville, Missouri
Siade, Jessie.....	Kansas City, Missouri
Slater, Opal, A.B.....	Boulder
Slattery, Katherine.....	St. Joseph, Missouri
Sleichter, Rose Elizabeth.....	Kansas City, Missouri
Slinker, Clay Dean.....	Des Moines, Iowa
Sloan, Elizabeth.....	Denver
Slocum, Lynn Ferd.....	Leola, South Dakota
Slye, Florence Mary, A.B.....	Boulder
Smellage, Oda Elizabeth.....	Waxahachie, Texas
Smith, Esther, A.B.....	Crete, Nebraska
Smith, Gratia Hyde, Pd.B.....	Casper, Wyoming
Smith, Hulah, B.Pd.....	Boulder
Smith, Katherine Estelle, B.L.....	Meridian, Mississippi
Smith, Leonora Augusta, A.B.....	Gainesville, Texas
Smith, Romeo Gaines, Pd.B.....	Clarence, Missouri
Smith, Ruth.....	Powell, Wyoming
Sneed, Clara.....	Du Quoin, Illinois
Snodgrass, Julia Gillette.....	Little Rock, Arkansas
Snyder, Lura Frances.....	Seymour, Texas
Southwell, Fred Bryan.....	Boulder

NAME	RESIDENCE
Speelman, Margaret Pearson.....	Chilocco, Oklahoma
Spencer, Floyd Albert.....	Boulder
Spencer, Katharine, B.L.....	St. Joseph, Missouri
Spencer, Sarah Crain.....	Lee's Summit, Missouri
Squire, Pauline Geraldine.....	Savanna, Illinois
Stahn, Beulah.....	Corning, Kansas
Stallard, Clara.....	Caney, Kansas
Stanley, May, B.S.....	Canon City
Staples, Otho Bowman, A.M.....	Baton Rouge, Louisiana
Stapp, Jessie B.....	Granbury, Texas
Startzman, Ida.....	Kansas City, Missouri
Steele, Mary.....	Hastings, Nebraska
Stegner, Sarah Louise, A.B.....	Omaha, Nebraska
Sternberg, Emma Lorena, A.B.....	Denver
Stevens, Margaret M., B.S.....	Stillwater, Oklahoma
Stine, Grace, B.S.....	Chickasha, Oklahoma
Stittsworth, Carrie B.....	Milford, Kansas
Stone, Jessie Ruth.....	Chicago, Illinois
Stone, Lulu May.....	Denver
Stone, Ruth.....	Roswell, New Mexico
Stone, Susan Dickinson.....	Highland Park, Illinois
Straughan, Cora Mae, B.S.....	West Middleton, Indiana
Straw, Henry.....	Gatesville, Texas
Street, Annie M.....	Independence, Missouri
Strong, Mazzie Ida.....	Wilcox, Nebraska
Sullivan, Mary Theresa.....	Denver
Tassey, Beryl, M.E.L.....	Sherman, Texas
Tate, Grace Matilda.....	Montgomery City, Missouri
Tate, Ollie.....	Cosby, Missouri
Taylor, May Ellen.....	Des Moines, Iowa
Tennyson, Elsie May.....	Muskogee, Oklahoma
Tesche, Leo Mortimer.....	Boulder
Thompson, Anna M., B.S.....	Kansas City, Missouri
Thompson, Bessie Margaret, B.S.....	Red Oak, Iowa
Thompson, Clara Gussefeld.....	Boulder
Thompson, Emma C.....	Topeka, Kansas
Thompson, Marie, A.B.....	Topeka, Kansas
Thompson, Marjorie C.....	Ferguson, Missouri
Thompson, Mary.....	Ada, Michigan
Thompson, Mary Penn, A.B.....	Nashville, Tennessee
Thompson, Stella McDowell, A.B.....	Parkville, Missouri
Thomson, Eva May.....	Glendale, Arizona
Thomson, J. Blanche.....	Girard, Kansas
Threadgill, Elizabeth D., A.B.....	Laredo, Texas
Thurston, Harold Marlin.....	Denver
Tikker, Lena.....	Abilene, Texas
Tingley, Ethel F.....	Terre Haute, Indiana
Tippins, Minnie, A.B.....	Brewton, Alabama
Toom, Grace E.....	Knoxville, Iowa
Townley, Alice Mable.....	Indianola, Nebraska
Townsend, Jane, B.S.....	Girard, Kansas
Townsend, Onabelle.....	Boulder
Trolinger, Lelia Gertrude, B.Ped.....	Clinton, Missouri
Troup, Susie M.....	Kansas City, Missouri
Turner, Pearl Viola, A.B.....	Boulder
Unsel, George Peterkin, A.B.....	Westminster
Upton, Gabriel Solon.....	Plainview, Texas
Uttley, Louise.....	Dubuque, Iowa
Vanceave, Dora Mildred.....	Olney Springs
Vansteel, Mabel.....	Quincy, Illinois
Van Valkenburgh, Horace Bulle, M.S.....	Brownwood, Texas
Vedder, Manota Belle.....	Franklin, Nebraska
Wahlgren, Harriet Eleanor.....	Washington, Nebraska
Walk, Olive May, Pd.B.....	Rocky Ford
Walker, Elizabeth Isabel.....	Santa Fe, New Mexico

NAME	RESIDENCE
Wallace, Willard Wright, LL.B.	El Paso, Texas
Wallach, Stanislaw	Fenton, Missouri
Walsh, Anna Elizabeth, A.B.	Hardtner, Kansas
Walsh, James Martin, A.B.	Hardtner, Kansas
Walter, Mary Ethyl	Pueblo
Ward, Leon Stevens, A.B.	Greeley
Ware, Edith Martha	Ogden, Utah
Watkins, Clay Celia, A.B.	Montrose
Watson, Effah May	Kiefer, Oklahoma
Watts, Amanda	Pryor, Oklahoma
Weage, Louisa Elizabeth	Kinsley, Kansas
Webb, Helen Manker	Boulder
Webster, Irma Mae	Elbridge, New York
Webster, Margie	Paris, Texas
Weems, Edna Mahala, A.B.	Fullerton, Nebraska
Weems, Mary Bryant, B.Ph.	Boulder
Weidlein, Winifred	Kansas City, Missouri
Weir, Gordon	Abilene, Texas
Weir, Pearle	Abilene, Texas
Weis, George Cornelius, B.S. in Ed.	Ladonna, Missouri
Wells, J. Mabel, A.B.	Maryville, Missouri
West, Robert Joseph	Colorado Springs
Westbrook, Marian	Peabody, Kansas
Weyerbacher, Leah, A.B.	Boulder
Wheatley, George	Boulder
Whitcomb, Selden Lincoln, A.M.	Lawrence, Kansas
White, Eunice	Arcadia, Nebraska
White, Gertrude	Arkansas City, Kansas
White, Katherine	Council Bluffs, Iowa
White, Winifred Harris	Boulder
Whiteside, Dorothy	Spearville, Kansas
Whiteside, Lulu Estelle	Waco, Texas
Whiting, Anne Thorborn	Goldfield
Whitenton, R. O., M.S.	Stillwater, Oklahoma
Whitson, Glenn Haverly, D.D.S.	Boulder
Whitten, Petrine Charlotte	Boulder
Wickert, Marie Ellen, A.B.	Fort Collins
Wiggins, Loretta Seattle	Canyon, Texas
Wildin, Electa Hoskin	Hutchinson, Kansas
Wildin, Janie Lee	Hutchinson, Kansas
Wilkinson, Elizabeth	Denver
Wilkinson, Thomas Ragland	Denver
Willhite, Frances M.	Nevada, Missouri
Williams, Bertha Inez	Fort Scott, Kansas
Williams, Grace, A.B.	McAlester, Oklahoma
Williams, Mary Clay	Tulsa, Oklahoma
Williams, Myrtle	Mertzon, Texas
Williams, Sallie R.	Quincy, Illinois
Wills, Margaret	Big Springs, Texas
Wilmor, Ernest E., A.B.	Denver
Wilson, Elizabeth, A.B.	Kansas City, Missouri
Wilson, May Ella, A.B.	Calumet, Oklahoma
Wilson, Molly	Emporia, Kansas
Winship, Caroline Esther	Kansas City, Missouri
Wittlief, Bertha Gertrude	Buffalo, New York
Woerner, Frank Henry, B.S.	Acton, Indiana
Woodworth, Elizabeth	Cashion, Oklahoma
Woodworth, Ruth	Kingfisher, Oklahoma
Woolston, Ethel Linn	Marshalltown, Iowa
Worley, Blanche B.	Grand Junction
Worley, Julia Olive, Pd.B.	Odessa, Missouri
Wright, John Evan Miles	Boulder
Wyman, Mary	Omaha, Nebraska

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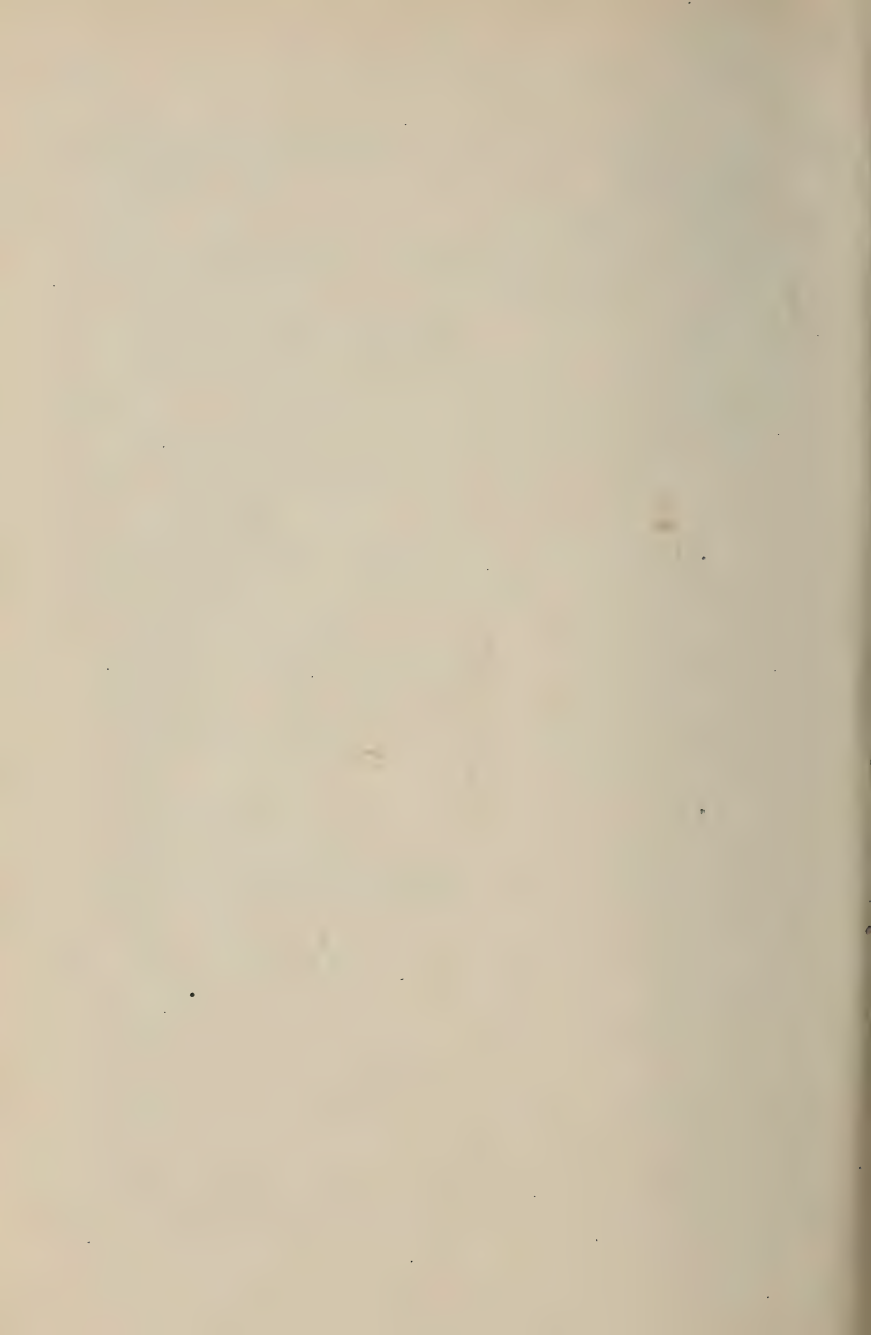
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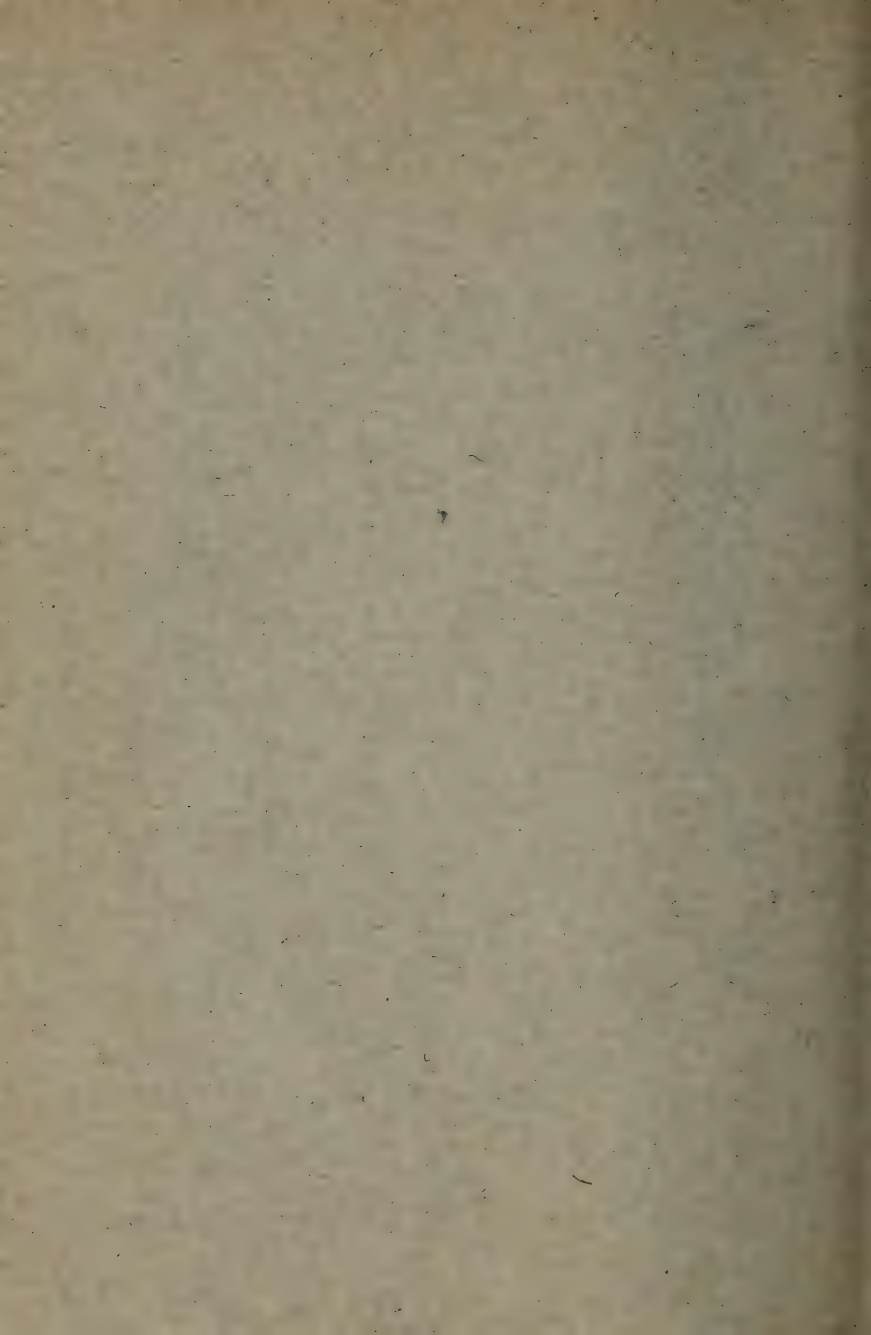
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CATALOGUE, 1918-1919



BOULDER, COLORADO, JUNE, 1919



The
University of Colorado
Catalogue, 1918-1919

With
Announcements for
1919-1920



Boulder, Colorado, June, 1919

1919

CALENDAR

1919

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	30	31							27	28	29	30	31				30							
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	6	7	8	9	10	11	12		10	11	12	13	14	15	16		7	8	9	10	11	12	13	
	13	14	15	16	17	18	19		17	18	19	20	21	22	23		14	15	16	17	18	19	20	
	20	21	22	23	24	25	26		24	25	26	27	28	29	30		21	22	23	24	25	26	27	
	27	28	29	30					31								28	29	30	31				

1920

CALENDAR

1920

	Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.		Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.		Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	
Jan.	4	5	6	7	1	2	3	May	2	3	4	5	6	7	8	Sept.	5	6	7	1	2	3	4	
	11	12	13	14	15	16	17		9	10	11	12	13	14	15		12	13	14	15	16	17	18	
	18	19	20	21	22	23	24		16	17	18	19	20	21	22		19	20	21	22	23	24	25	
	25	26	27	28	29	30	31		23	24	25	26	27	28	29		26	27	28	29	30	--	--	
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Feb.	1	2	3	4	5	6	7	June	--	--	1	2	3	4	5	Oct.	--	3	4	5	6	--	1	2
	8	9	10	11	12	13	14		6	7	8	9	10	11	12		3	4	5	6	7	8	9	
	15	16	17	18	19	20	21		13	14	15	16	17	18	19		10	11	12	13	14	15	16	
	22	23	24	25	26	27	28		20	21	22	23	24	25	26		17	18	19	20	21	22	23	
	29	--	--	--	--	--	--		27	28	29	30	--	--	--		24	25	26	27	28	29	30	
Mar.	--	1	2	3	4	5	6	July	--	--	--	--	1	2	3	Nov.	31	--	1	2	3	4	5	6
	7	8	9	10	11	12	13		4	5	6	7	8	9	10		7	8	9	10	11	12	13	
	14	15	16	17	18	19	20		11	12	13	14	15	16	17		14	15	16	17	18	19	20	
	21	22	23	24	25	26	27		18	19	20	21	22	23	24		14	15	16	17	18	19	20	
	28	29	30	31	--	--	--		25	26	27	28	29	30	31		21	22	23	24	25	26	27	
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Apr.	--	--	--	--	1	2	3	Aug.	1	2	3	4	5	6	7	Dec.	--	5	6	7	8	9	10	11
	4	5	6	7	8	9	10		8	9	10	11	12	13	14		12	13	14	15	16	17	18	
	11	12	13	14	15	16	17		15	16	17	18	19	20	21		19	20	21	22	23	24	25	
	18	19	20	21	22	23	24		22	23	24	25	26	27	28		26	27	28	29	30	31	--	
	25	26	27	28	29	30	--		29	30	31	--	--	--	--		--	--	--	--	--	--	--	
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ANNOUNCEMENTS

1919.

- Jan. 15, Wednesday...Meeting of Board of Regents.
Jan. 27, Monday.....Winter Quarter begins.
Feb. 12, Wednesday. . Lincoln's Birthday (Holiday).
Feb. 22, Saturday.....Washington's Birthday (Holiday).
April 6, Sunday to
April 13, Sunday.....Spring Recess.
April 14, Monday.....Spring Quarter begins.
April 16, Wednesday...Meeting of Board of Regents.
May 30, Friday.....Decoration Day (Holiday).
June 20, Friday.....All examinations completed.
June 22, Sunday.....Baccalaureate Address
June 23, Monday.....Senior Class Play.
Meeting of Board of Regents.
June 24, Tuesday.....Class Day Exercises and Parade.
President's Reception.
Alumni Banquet and Reception.
Senior Promenade.
June 25, Wednesday...Commencement.
June 30 to Aug. 2.....Summer Quarter (first term).
Aug. 4 to Sept. 6.....Summer Quarter (second term).
Sept. 22, Monday.....Meeting of Board of Regents.

ACADEMIC YEAR, 1919-1920

ERRATA.

Under heading: Academic Year, 1919-1920, announcement date:

Dec. 31, Sunday to

Jan. 4, Sunday.....Winter Recess;

Should read:

Dec. 21, Sunday to

Jan. 4, SundayWinter Recess.

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1919

CALENDAR

1919

	Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.		Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.		Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.
Jan.	5	6	7	8	9	10	11	May	4	5	6	7	8	9	10	Sept.	7	8	9	10	11	12	13
	12	13	14	15	16	17	18		11	12	13	14	15	16	17		14	15	16	17	18	19	20
	19	20	21	22	23	24	25		18	19	20	21	22	23	24		21	22	23	24	25	26	27
	26	27	28	29	30	31	--		25	26	27	28	29	30	31		28	29	30	--	--	--	--
Feb.	2	3	4	5	6	7	8	June	1	2	3	4	5	6	7	Oct.	5	6	7	8	9	10	11
	9	10	11	12	13	14	15		8	9	10	11	12	13	14		12	13	14	15	16	17	18
	16	17	18	19	20	21	22		15	16	17	18	19	20	21		19	20	21	22	23	24	25
	23	24	25	26	27	28	--		22	23	24	25	26	27	28		26	27	28	29	30	31	--
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Mar.	2	3	4	5	6	7	8	July	6	7	8	9	10	11	12	Nov.	2	3	4	5	6	7	8
	9	10	11	12	13	14	15		13	14	15	16	17	18	19		9	10	11	12	13	14	15
	16	17	18	19	20	21	22		20	21	22	23	24	25	26		16	17	18	19	20	21	22
	23	24	25	26	27	28	29		27	28	29	30	31	--	--		23	24	25	26	27	28	29
	30	31	--	--	--	--	--		--	--	--	--	--	--	--		30	--	--	--	--	--	--
Apr.	6	7	8	9	10	11	12	Aug.	3	4	5	6	7	8	9	Dec.	7	8	9	10	11	12	13
	13	14	15	16	17	18	19		10	11	12	13	14	15	16		14	15	16	17	18	19	20
	20	21	22	23	24	25	26		17	18	19	20	21	22	23		21	22	23	24	25	26	27
	27	28	29	30	--	--	--		24	25	26	27	28	29	30		28	29	30	31	--	--	--
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1920

CALENDAR

1920

	Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.		Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.		Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.
Jan.	4	5	6	7	8	9	10	May	8	9	10	11	12	13	14	Sept.	5	6	7	8	9	10	11
	11	12	13	14	15	16	17		9	10	11	12	13	14	15		12	13	14	15	16	17	18
	18	19	20	21	22	23	24		16	17	18	19	20	21	22		19	20	21	22	23	24	25
	25	26	27	28	29	30	31		23	24	25	26	27	28	29		26	27	28	29	30	--	--
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Feb.	1	2	3	4	5	6	7	June	1	2	3	4	5	6	7	Oct.	1	2	3	4	5	6	7
	8	9	10	11	12	13	14		8	9	10	11	12	13	14		8	9	10	11	12	13	14
	15	16	17	18	19	20	21		15	16	17	18	19	20	21		15	16	17	18	19	20	21
	22	23	24	25	26	27	28		22	23	24	25	26	27	28		22	23	24	25	26	27	28
	29	30	--	--	--	--	--		29	30	--	--	--	--	--		29	30	--	--	--	--	--
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ANNOUNCEMENTS

1919.

- Jan. 15, Wednesday...Meeting of Board of Regents.
Jan. 27, Monday.....Winter Quarter begins.
Feb. 12, Wednesday. . Lincoln's Birthday (Holiday).
Feb. 22, Saturday.....Washington's Birthday (Holiday).
April 6, Sunday to
April 13, Sunday.....Spring Recess.
April 14, Monday.....Spring Quarter begins.
April 16, Wednesday...Meeting of Board of Regents.
May 30, Friday.....Decoration Day (Holiday).
June 20, Friday.....All examinations completed.
June 22, Sunday.....Baccalaureate Address
June 23, Monday.....Senior Class Play.
Meeting of Board of Regents.
June 24, Tuesday.....Class Day Exercises and Parade.
President's Reception.
Alumni Banquet and Reception.
Senior Promenade.
June 25, Wednesday...Commencement.
June 30 to Aug. 2.....Summer Quarter (first term).
Aug. 4 to Sept. 6.....Summer Quarter (second term).
Sept. 22, Monday.....Meeting of Board of Regents.

ACADEMIC YEAR, 1919-1920

- Sept. 29, Monday.....Autumn Quarter begins; Registration (Reg-
istration begins Friday, Sept. 26).
Sept. 30, Tuesday.....Assembly of Students at 11:00.
Nov. 12, Wednesday...Meeting of Board of Regents.
Nov. 27, Thursday....Thanksgiving Day (Holiday).
Nov. 28, Friday.....Holiday.
Dec. 31, Sunday to
Jan. 4, Sunday.....Winter Recess.
1920.
Jan. 5, Monday.....Winter Quarter begins.
Jan. 14, Wednesday...Meeting of Board of Regents.

- Feb. 12, Thursday.....Lincoln's Birthday (Holiday).
Feb. 22, Sunday.....Washington's Birthday (Holiday).
Mar. 21, Sunday to
Mar. 28, Sunday.....Spring Recess.
Mar. 29, Monday.....Spring Quarter begins.
April 14, Wednesday...Meeting of Board of Regents.
April 16, Friday.....Arbor Day (Holiday).
May 30, Sunday.....Decoration Day (Holiday).
June 11, Friday.....All examinations completed.
June 13, Sunday.....Baccalaureate Address.
June 14, Monday.....Senior Class Play.
Meeting of Board of Regents.
June 15, Tuesday.....Class Day Exercises and Parade.
President's Reception.
Alumni Banquet and Reception.
Senior Promenade.
June 16, Wednesday...Commencement.
June 21 to Sept. 4.....Summer Quarter.

BOARD OF REGENTS

MINNIE LAHM HARDING.....	Canon City
Term expires, 1920.	
CLIFFORD C. PARKS.....	Glenwood Springs
Term expires, 1920.	
THOMAS T. BARNARD.....	Victor
Term expires, 1922.	
CLIFFORD W. MILLS.....	Denver
Term expires, 1922.	
CHARLES R. DUDLEY.....	Denver
Term expires, 1924.	
WILLIAM J. KING.....	Denver
Term expires, 1924.	

OFFICERS OF THE BOARD

GEORGE NORLIN.....	Boulder	President
FRANK H. WOLCOTT.....	Boulder	Secretary
CHARLES H. CHENEY.....	Boulder	Treasurer

COMMITTEES OF THE BOARD

EXECUTIVE—Messrs. Parks, King, Norlin.
AUDITING—Messrs. Dudley, Mills, Norlin.
BUILDING AND GROUNDS—Messrs. Dudley, Mills, Norlin.
FINANCE—Messrs. Parks, King, Barnard.
LIBRARY—Mr. Dudley, Mrs. Harding, Mr. Smith.
INSTRUCTORS—Messrs. Norlin, King, Mrs. Harding.

ADVISORY BOARD*

	Town.	County.
GEORGE A. GARARD.....	Brighton	Adams Arapahoe
ALLEN J. NOSSAMAN, M.D.....	Pagosa Springs.....	Archuleta
WILLIAM HOOKER.....	Springfield	Baca
P. G. SCOTT.....	Las Animas	Bent
ALLEN M. LAMBRIGHT.....	Las Animas	Bent
THOMAS BUTLER.....	Longmont	Boulder
GEORGE H. CURFMAN, M.D.....	Salida	Chaffee
E. P. HICKMAN.....	Cheyenne Wells.....	Cheyenne
ALBERT A. STOVER.....	Idaho Springs.....	Clear Creek
FREDERICK W. SWANSON.....	Alamosa	Conejos
CHARLES GROENENDYKE.....	San Luis.....	Costilla Crowley
JOHN H. LEARY.....	Westcliffe	Custer
GEORGE STEPHAN.....	Delta	Delta
GUSTAVE C. BARTELS.....	Denver	Denver
CLAYTON C. DORSEY.....	Denver	Denver
NELSON FRANKLIN.....	Denver	Denver
IRVING HALE	Denver	Denver
HORACE N. HAWKINS.....	Denver	Denver
EDWIN H. PARK.....	Denver	Denver
JOHN H. GABRIEL.....	Denver	Denver
FRANK E. SHEPARD.....	Denver	Denver
JOHN W. SPRINGER.....	Denver	Denver
THOMAS B. STEARNS.....	Denver	Denver
THOMAS L. WILKINSON.....	Denver	Denver
CHARLES MACALLISTER WILLCOX....	Denver	Denver
MRS. ANNA WOLCOTT VAILE.....	Denver	Denver
JULIUS C. GUNTER.....	Denver	Denver Dolores
JOHN ANDERSON.....	Castle Rock	Douglas
JAMES DILTS.....	Eagle	Eagle
WILLIAM D. REILLY.....	Kiowa	Elbert
JOSEPH F. HUMPHREY.....	Colorado Springs.....	El Paso
ROBERT KERR.....	Colorado Springs.....	El Paso

* The members of the Advisory Board are appointed by the Regents for a term of one year. The service is without compensation. Annual meetings of the Advisory Board are held at the University, during Commencement week.

	Town.	County.
MATT N. LINES.....	Canon City.....	Fremont
JAMES G. JOHNSTON.....	Florence	Fremont
		Garfield
CHASE WITHROW.....	Central City.....	Gilpin
DAVID P. HOWARD.....	Sulphur Springs.....	Grand
JOHN A. LEHRBITTER.....	Gunnison	Gunnison
BENJAMIN F. CUMMINGS, M.D.....	Lake City.....	Hinsdale
CHARLES HAYDEN.....	Walsenburg	Huerfano
OWEN S. CASE.....	Walden	Jackson
WILLIAM G. SMITH.....	Golden	Jefferson
RAYMOND MILLER.....	Galatea	Kiowa
WILLIAM D. SELDER.....	Burlington	Kit Carson
CHARLES CAVENDER.....	Leadville	Lake
CHARLES A. PIKE.....	Durango	La Plata
FRANK J. ANNIS.....	Fort Collins.....	Larimer
JOSEPH C. BELL.....	Trinidad	Las Animas
EDWARD H. DAY.....	Trinidad	Las Animas
EUSEBIO CHACON.....	Trinidad	Las Animas
		Lincoln
L. K. PARR.....	Padroni	Logan
HORACE T. DELONG.....	Grand Junction.....	Mesa
		Mineral
ROBERT M. RICHARDSON.....	Craig	Moffat
LEONARD H. CLARK, M.D.....	Mancos	Montezuma
J. F. COLEMAN, M.D.....	Montrose	Montrose
FREDERICK W. LOCKWOOD, M.D.....	Fort Morgan.....	Morgan
ROBERT W. PATTERSON.....	La Junta.....	Otero
G. M. DAMERON.....	La Junta.....	Otero
WILLIAM W. ROWAN, M.D.....	Ouray	Ouray
		Park
R. G. McKIBBEN.....	Holyoke	Phillips
		Pitkin
JOHN C. HORN.....	Lamar	Prowers
C. B. THOMAN.....	Lamar	Prowers
J. K. DOUGHTY.....	Lamar	Prowers
ALVA ADAMS.....	Pueblo	Pueblo
P. J. DUGAN.....	Pueblo	Pueblo
JAMES LYTTLE.....	Meeker	Rio Blanco
JOHN A. BILES, M.D.....	Del Norte.....	Rio Grande

	Town.	County.
BENJAMIN F. NIESZ.....	<i>Steamboat Springs</i>	<i>Routt</i>
CHARLES TARBELL.....	<i>Saguache</i>	<i>Saguache</i>
JOHN T. JOYCE.....	<i>Silverton</i>	<i>San Juan</i>
STEPHEN A. BAILEY.....	<i>Telluride</i>	<i>San Miguel</i>
ETHELBERT B. ADAMS.....	<i>Telluride</i>	<i>San Miguel</i>
BERTRAND D. PARKER, JR.....	<i>Julesburg</i>	<i>Sedgwick</i>
CLARENCE O. FINCH.....	<i>Julesburg</i>	<i>Sedgwick</i>
WILLIAM F. FORMAN.....	<i>Breckenridge</i>	<i>Summit</i>
GRIFFITH R. LEWIS.....	<i>Cripple Creek</i>	<i>Teller</i>
HAROLD D. THOMPSON.....	<i>Cripple Creek</i>	<i>Teller</i>
EGBERT MORE.....	<i>Akron</i>	<i>Washington</i>
GEORGE D. STATLER.....	<i>Greeley</i>	<i>Weld</i>
THOMAS B. GROVES.....	<i>Wray</i>	<i>Yuma</i>

COLLEGES AND SCHOOLS OF THE UNIVERSITY

I. COLLEGE OF LIBERAL ARTS:

Leading to the degree A.B.

College of Commerce:

Leading to the degree A.B. and special certificate.

College of Education:

Leading to the degree A.B. and special certificate.

College of Home Economics and Social Service:

Leading to the degree B.S.

II. COLLEGE OF ENGINEERING:

Civil Engineering, leading to the degree B.S. (C.E.).

Electrical Engineering, leading to the degree B.S. (E.E.).

Mechanical Engineering, leading to the degree B.S. (M.E.).

Chemical Engineering, leading to the degree B.S. (Ch.E.).

III. GRADUATE SCHOOL:

Leading to the degrees Ph.D. and A.M.; M.S., C.E., E.E.,
and M.E.; D.Oph., and M.S. (San. Eng.).

IV. SCHOOL OF MEDICINE:

Leading to the degree M.D.

V. SCHOOL OF LAW:

Leading to the degree LL.B.

VI. COLLEGE OF PHARMACY:

Leading to the degrees Ph.C., and B.S. (Phar.).

VII. SUMMER QUARTER.

VIII. UNIVERSITY EXTENSION DIVISION:

Department of Instruction:

Correspondence Instruction.

Class Instruction.

Vocational Instruction.

Department of Public Service:

Community Welfare.

Business and Commercial Development.

Lectures and Visual Instruction.

Americanization.

Library Extension.

Municipal Information.

Publications.

GENERAL FACULTY*

GEORGE NORLIN, Ph.D., President.

JAMES H. BAKER, A.M., LL.D., President, Emeritus.

J. RAYMOND BRACKETT, Ph.D., Dean of the Graduate School; Professor of Comparative and English Literature.

LUMAN M. GIFFIN, M.D., Professor of Surgery, Emeritus.

IRA M. DELONG, A.M., LL.D., Professor of Mathematics.

†JOHN CHASE, A.B., M.D., Professor of Ophthalmology, Emeritus.

THOMAS E. TAYLOR, A.B., M.D., Professor of Obstetrics, Emeritus.

ALBERT A. REED, LL.B., Professor of Law, Emeritus.

WILLIAM B. CRAIG, M.D., Professor of Surgery, Emeritus.

E. BARBER QUEAL, M.D., Professor of Physiology, Emeritus.

FRED B. R. HELLEMS, Ph.D., LL.D., Dean of the College of Liberal Arts; Professor of Latin.

CHARLES C. AYER, Ph.D., Professor of Romance Languages.

FRANCIS RAMALEY, Ph.D., Acting Dean of the College of Pharmacy; Professor of Biology.

CHARLES A. ELDER, M.D., Professor of Surgery, Emeritus.

NEWTON WIEST, M.D., Professor of Dermatology, Emeritus.

MELANCHTHON F. LIBBY, Ph.D., Professor of Philosophy.

JOHN BERNARD EKELEY, Ph.D., Sc.D., Professor of Chemistry.

JOHN CAMPBELL, A.M., LL.B., LL.D., Dean of the School of Law, Emeritus.

RUSSELL D. GEORGE, A.M., Professor of Geology.

JOHN D. FLEMING, A.B., LL.B., LL.D., Dean of the School of Law; Charles Inglis Thomson Professor of Law.

‡JAMES R. ARNEILL, A.B., M.D., Professor of Medicine, Emeritus.

§MILO S. KETCHUM, C.E., Dean of the College of Engineering; Professor of Civil Engineering.

CHARLES B. LYMAN, M.D., Professor of Clinical Surgery.

JOHN M. FOSTER, M.D., Professor of Oto-laryngology, Emeritus.

* Professors, Assistant Professors, Lecturers, and Instructors are arranged in the order of appointment. Assistants rank as their departments. Within the general faculty are organized the Advisory Council, Senate, and faculties of the several schools and colleges.

† Died May 4, 1918.

‡ On war service.

§ On leave of absence, autumn quarter, 1918-1919, for war service.

EDWARD JACKSON, A.M., M.D., Sc.D., Professor of Ophthalmology.

*HERBERT S. EVANS, E.E., Professor of Electrical Engineering.

JOHN A. HUNTER, M.E., Professor of Mechanical Engineering.

THEODORE D. A. COCKERELL, Sc.D., Professor of Zoology.

|| WILLIAM P. HARLOW, A.B., M.D., Dean of the School of Medicine, Emeritus.

GEORGE M. CHADWICK, Professor of Music.

JAMES F. WILLARD, Ph.D., Professor of History.

† OLIVER C. LESTER, Ph.D., Professor of Physics.

FRANK E. THOMPSON, A.B., Director of the College of Education; Professor of Education.

ROSS C. WHITMAN, A.B., M.D., Secretary of the School of Medicine, Boulder Division; Professor of Pathology.

JUNIUS HENDERSON, A.B., Curator of the Museum; Professor of Natural History.

JOHN S. McLUCAS, A.M., Professor of English.

GRACE VAN SWERINGEN BAUR, Ph.D., Professor of Germanic Languages.

‡ CLOUGH T. BURNETT, M.D., Professor of Bacteriology.

MILO G. DERHAM, Ph.D., Director of the Summer Quarter; Professor of Latin.

§ LAWRENCE W. COLE, Ph.D., Director of the College of Home Economics and Social Service; Professor of Psychology.

GEORGE E. NEUHAUS, M.D., Professor of Neurology and Psychiatry.

EDMUND J. A. ROGERS, A.M., M.D., Professor of Surgery, Emeritus.

THOMAS H. HAWKINS, A.M., M.D., LL.D., Professor of Surgery, Emeritus.

§ ROBERT LEVY, M.D., Professor of Oto-laryngology.

WILLIAM H. DAVIS, M.D., Professor of Dermatology, Emeritus.

· WILLIAM J. ROTHWELL, M.D., Professor of Medicine, Emeritus.

|| FRANCIS H. McNAUGHT, M.D., Professor of Obstetrics, Emeritus.

LEONARD FREEMAN, B.S., A.M., M.D., Professor of Surgery.

CHARLES A. POWERS, A.M., M.D., Professor of Surgery, Emeritus.

HERBERT B. WHITNEY, A.B., M.D., Professor of Medicine, Emeritus.

SHERMAN G. BONNEY, A.M., M.D., Professor of Medicine, Emeritus.

* Acting Dean of the College of Engineering during the absence of Dean Ketchum.

† On leave of absence, autumn quarter, 1918-1919, for war service.

‡ On leave of absence, February, 1918 to February, 1919, for war service.

§ On leave of absence for war service.

|| On war service.

- GEORGE B. PACKARD, M.D., Professor of Orthopedics, Emeritus.
 T. MITCHELL BURNS, M.D., Professor of Obstetrics, Emeritus.
 *WALTER A. JAYNE, M.D., Professor of Gynecology, Emeritus.
 CHARLES B. VAN ZANT, M.D., Professor of Physiology, Emeritus.
 WILLIAM C. MITCHELL, M.D., Professor of Bacteriology, Emeritus.
 DAVID H. COOVER, M.D., Professor of Ophthalmology, Emeritus.
 JAMES C. TODD, Ph.B., M.D., Professor of Clinical Pathology.
 †CARBON GILLASPIE, M.D., Professor of Anatomy.
 †HOMER C. WASHBURN, B.S. (Phar.), Dean of the College of Pharmacy; Professor of Pharmacy.
 †ARTHUR J. MARKLEY, D.D.S., M.D., Professor of Dermatology.
 LORAN D. OSBORN, Ph.D., Director of the Extension Division; Professor of Sociology.
 FREDERICK A. BUSHEE, Ph.D., Director of the College of Commerce; Professor of Economics and Sociology.
 RALPH D. CRAWFORD, Ph.D., Professor of Mineralogy and Petrology.
 †HARRY A. CURTIS, B.S. (Ch.E.), Ph.D., Professor of Physical Chemistry.
 †FRED G. FOLSOM, A.B., LL.B., Professor of Law.
 WILLIAM R. ARTHUR, A.B., LL.B., Professor of Law.
 CHARLES N. MEADER, A.B., M.D., Dean of the School of Medicine; Professor of Medicine.
 FRANK L. CLAPP, Ph.D., Professor of School Administration; High School Visitor.
 †ARNOLD J. LIEN, Ph.D., Professor of Political Science.
 ROBERT C. LEWIS, Ph.D., Director of Henry S. Denison Research Laboratory; Professor of Biochemistry.
 HERBERT S. HADLEY, A.B., LL.B., LL.D., Professor of Law.
 ‡WILLIAM BLACK, M.E., Professor of Steam and Gas Engineering.
 †CLARENCE B. INGRAHAM, Ph.B., M.D., Professor of Obstetrics and Gynecology.
 §JAMES A. MERRITT, Captain, U. S. A., Retired, Professor of Military Science and Tactics.
 ¶WHITNEY C. HUNTINGTON, M.S., C.E., Professor of Structural Engineering.

* On war service.

† On leave of absence for war service.

‡ Died February 6, 1919.

§ Resigned November, 1918.

¶ Assistant Dean of the College of Engineering during the absence of Dean Ketchum.

CHARLES S. SPERRY, A.B., C.E., Professor of Engineering Mathematics.

JAY W. WOODROW, Ph.D., Professor of Physics.

*HERBERT B. DWIGHT, E.E., Professor of Electrical Engineering.

EDWIN W. PATTERSON, A.B., LL.B., Professor of Law.

CHARLES M. GRUBER, Ph.D., Professor of Physiology and Pharmacology.

IVAN E. WALLIN, D.Sc., Acting Professor of Anatomy.

OSCAR M. GILBERT, M.D., Associate Professor of Medicine.

†JOSIAH N. HALL, B.S., M.D., Associate Professor of Medicine.

HOWELL T. PERSHING, M.S., M.D., LL.D., Associate Professor of Psychiatry.

MOSES KLEINER, M.D., Associate Professor of Therapeutics.

MELVILLE BLACK, M.D., Associate Professor of Ophthalmology.

SAMUEL B. CHILDS, A.B., M.D., Associate Professor of Roentgenology.

WILLIAM C. BANE, M.D., Associate Professor of Oto-laryngology.

†OLIVER LYONS, M.D., Associate Professor of Genito-Urinary Surgery.

†SAMUEL FOSDICK JONES, M.D., Associate Professor of Orthopedic Surgery.

†FRANK P. GENGENBACH, M.D., Associate Professor of Pediatrics.

*DAVID R. JENKINS, E.E., Director of the Electrical Standardizing Laboratory; Assistant Professor of Electrical Engineering.

‡S. ANTOINETTE BIGELOW, A.M., Dean of Women; Assistant Professor of English Literature.

FROST C. BUCHEL, M.D., Assistant Professor of Surgery.

†EDWARD F. DEAN, M.D., Assistant Professor of Clinical Surgery.

AUBREY H. WILLIAMS, M.D., Assistant Professor of Clinical Surgery.

§C. HENRY SMITH, Ph.B., Librarian; Assistant Professor of Bibliography.

†MAX M. ELLIS, Ph.D., Sc.D., Assistant Professor of Biology.

CARL C. ECKHARDT, Ph.D., Assistant Professor of History.

FRANK S. BAUER, M.E., Assistant Professor of Mechanical Engineering.

* Resigned January 1, 1919.

† On leave of absence for war service.

‡ On leave of absence, 1918-1919.

§ Leave of absence from the Library to act as quartermaster for the S. A. T. C., autumn quarter, 1918-1919.

- PHILIP G. WORCESTER, A.M., Assistant Professor of Geology.
WILLIAM F. BAUR, Ph.B., Assistant Professor of Germanic Languages.
FRANK G. ALLEN, B.S. (M.E.), Assistant Professor of Engineering Drawing.
*IVAN C. CRAWFORD, C.E., Assistant Professor of Civil Engineering.
PAUL M. DEAN, Ph.D., Assistant Professor of Chemistry.
GEORGE H. LIGHT, Ph.D., Assistant Professor of Mathematics.
THOMAS MAITLAND MARSHALL, Ph.D., Assistant Professor of History.
*GEORGE H. CATTERMOLLE, M.D., Assistant Professor of Pediatrics.
EDWARD DELEHANTY, M.D., Assistant Professor of Neurology.
CLAUDE EDWARD COOPER, A.B., M.D., Assistant Professor of Otolaryngology.
RUDOLPH W. ARNDT, M.D., Assistant Professor of Medicine.
GEORGE A. MOLEEN, M.D., Assistant Professor of Neurology.
*CHARLES F. POE, A.M., B.S. (Phar.), Acting Assistant Professor of Pharmacy.
FRANCIS J. PERUSSE, B.Sc., Acting Assistant Professor of Pharmacy.
WALTER F. MALLORY, B.S. (M.E.), Assistant Professor of Mechanical Engineering.
OSCAR A. RANDOLPH, Ph.D., Assistant Professor of Physics.
PHILIP B. McDONALD, B.S., E.M., Assistant Professor of Engineering English.
†SIEBELT L. SIMMERING, M.E., Assistant Professor of Mechanical Engineering.
*JAMES N. ASHMORE, Director of Physical Education.
HELEN MASTERS BUNTING, Director of Physical Education for Women.
ELMORE PETERSEN, A.B., Secretary of Bureau of Business and Commercial Development.
*ARTHUR E. GILMAN, A.B., Secretary of the Bureau of Community Welfare.
JAMES C. STEPHENS, A.B., Secretary of the Bureau of Vocational Instruction.
OTHO B. STAPLES, A.M., Superintendent Western Colorado District, Extension Division.
ROBERT S. MORRISON, Lecturer on Law of Mines and Mining.

* On leave of absence for war service.

† Appointed April, 1919.

- *WILLARD J. WHITE, A.M., M.D., Lecturer on Medical Jurisprudence.
JAMES W. MCCREERY, Lecturer on Law of Irrigation and Water Rights.
JOHN E. ROBINSON, Lecturer on Bankruptcy.
HARRY S. SILVERSTEIN, A.B., Lecturer on Criminal Procedure.
HENRY E. LUTZ, LL.B., Lecturer on Equity Pleading and Practice.
JOHN H. FRY, LL.B., Lecturer on Auxiliary Code Remedies.
HENRY SEWALL, Ph.D., M.D., Sc.D., Lecturer on Medicine.
JAMES H. PERSHING, A.B., Lecturer on Medical Jurisprudence.
ARTHUR H. EARLEY, M.D., Lecturer on Rectal Surgery.
ORA S. FOWLER, B.S., M.D., Lecturer on Local Anaesthetics.
ARTHUR W. FITZGERALD, A.B., LL.B., Lecturer on Conveyancing and Abstracts.
ELSIE S. PRATT, M.D., Medical Adviser to Women.
*FRANK R. SPENCER, A.B., M.D., Instructor in Oto-laryngology.
CLAY E. GIFFIN, A.B., M.D., Instructor in Surgery.
*DONALD MCFAYDEN, B.D., Ph.D., Instructor in History.
LORENA UNDERHILL, A.M., Instructor in Philosophy.
JESSIE HUTSINPILLAR, A.M., Instructor in Engineering English.
CLARIBEL KENDALL, A.M., Instructor in Mathematics.
*FRANCIS WOLLE, A.M., Instructor in English Literature.
CHARLES M. MCCORMICK, E.E., Instructor in Electrical Engineering.
*HENRY WILLIAMS WILCOX, M.D., Instructor in Orthopedic Surgery.
*CYRUS L. PERSHING, B.S., M.D., Instructor in Neurology.
ROBERT L. CHARLES, M.D., Instructor in Anaesthesia.
WILLIAM H. CRISP, M.D., D.Oph., Instructor in Ophthalmology.
*CLARENCE L. ECKEL, B.S. (C.E.), Instructor in Civil Engineering.
EDWARD R. MUGRAGE, A.M., M.D., Director of Laboratories (Denver); Instructor in Pathology.
*ERSKINE R. MYER, A.B., Instructor in English.
*WILLIAM WILEY JONES, A.B., M.D., Instructor in Medicine.
MAUD E. CRAIG, A.M., Instructor in Latin.
IRENE P. MCKEEHAN, A.M., Acting Dean of Women; Instructor in English.
*GEORGE P. LINGENFELTER, M.D., Instructor in Dermatology and Syphilis.
*JAMES H. COWLES, A.B., Instructor in Life Insurance and Extension Instructor.

* On leave of absence for war service.

- GLADYS C. CURTIS, A.M., Instructor in Education.
ALICE DOWNING HUNTER, A.M., Instructor in English.
OLIN INGRAHAM, A.M., Instructor in Economics.
ARTHUR CHAPMAN, Litt.M., Instructor in Journalism.
*ESBON Y. TITUS, Ph.D., Instructor in Chemistry.
JOHN W. RENNELL, Instructor in Art.
BESSIE R. GREEN, A.M., Instructor in Biology.
SUSAN BLAKEY, A.B., B.S., Instructor in Home Economics.
JOHN D. COOKE, A.M., Instructor in English Literature.
JOHN MURRAY BARNEY, M.D., Instructor in Medicine.
JOHN B. DAVIS, M.D., Instructor in Genito-Urinary Surgery.
CASPER F. HEGNER, M.D., Instructor in Surgery.
OSCAR M. SHERE, M.D., Instructor in Surgery.
*CUTHBERT POWELL, M.D., Instructor in Gynecology.
FOSTER H. CARY, M.D., Instructor in Obstetrics.
CHARLES A. FERRIS, M.D., Instructor in Obstetrics.
*PHILLIPS M. CHASE, M.D., Instructor in Obstetrics.
HARRY L. BAUM, M.D., Instructor in Oto-laryngology.
BRYANT SMITH, A.B., LL.B., Instructor in Debating.
MARY V. MCFARLAND, A.B., Instructor in Psychology.
RUSSELL N. LOOMIS, B.S. (Phar.), Instructor in Chemistry.
HORACE B. VAN VALKENBURGH, M.S., Instructor in Chemistry.
BENJAMIN D. CORNELL, A.M., Instructor in Chemistry.
WAYNE S. BEATTIE, B.S. (M.E.), Instructor in Mechanical Engineering.
†LESLIE E. MINER, B.S., Instructor in Civil Engineering.
EVA M. BAUM, A.B., Instructor in Chemistry.
WANDA I. FRAIKEN, A.M., Instructor in English.
CLARA HISCOCK BRACE, A.B., Instructor in Education.
TRACY R. LOVE, Ph.B., M.D., Instructor in Dietetics.
HENRY M. SAYRE, Instructor in Accounting.
*WILLIAM C. FINNOFF, M.D., D.Oph., Instructor in Ophthalmology.
JOHN A. MCCAW, M.D., D.Oph., Instructor in Ophthalmology.
*WILLIAM A. SEDWICK, M.D., Instructor in Ophthalmology.
HIRAM R. STILWILL, M.D., Instructor in Ophthalmology.
‡RUSH E. THOMAS, B.S. (C.E.), Instructor in Civil Engineering.
PARKER R. WHITNEY, B.S. (C.E.), Instructor in Civil Engineering.

* On leave of absence for war service.

† Resigned January 15, 1919.

‡ Resigned April 4, 1919.

MAY SNYDER, A.B., Instructor in Romance Languages.

YOLANDA S. ALLEN, Instructor in Physical Education for Women.

CHARLOTTE F. ATWOOD, A.B., Instructor in Psychology and Assistant in Romance Languages.

WALDO E. BROCKWAY, B.S. (C.E.), Instructor in Civil Engineering.

WILLIAM F. BRUBAKER, B.S. (C.E.), Instructor in Engineering Drawing.

Q. RANDOLPH DUNGAN, B.S. (Ch.E.), Instructor in Engineering Mathematics.

FLORENCE M. FARRINGTON, A.M., Instructor in Romance Languages.

MARY GARVIN, A.B., Instructor in Romance Languages.

CHARLES A. HUTCHINSON, A.M., Instructor in Engineering Mathematics.

GLADYS H. MATHEW, A.B., Instructor in English Literature.

*ALBERT S. ROMIG, B.S. (M.E.), Instructor in Engineering Mathematics.

HERMAN G. STRAUSS, B.S. (C.E.), Instructor in Engineering Mathematics.

ELIZA G. WILKINS, Ph.D., Instructor in Greek.

WILLIAM WARREN HOWE, A.B., Instructor in Chemistry.

†LOUIS C. STERN, B.S. (C.E.), Instructor in Civil Engineering.

HAROLD T. SEARS, B.S. (M.E.), Instructor in Mechanical Engineering.

JOHN G. THORPE, B.S. (E.E.), Instructor in Electrical Engineering.

‡HUGH M. KINGERY, Ph.D., Instructor in Anatomy.

§ELLERT L. McGRATH, B.S. (C.E.), Instructor in Engineering Mathematics.

||HOWARD P. BUNGER, B.S. (C.E.), Instructor in Civil Engineering.

¶FRED R. DUNGAN, B.S., Instructor in Civil Engineering.

A. CHAUNCEY JOHNSON, B.S., Vocational Instructor, Extension Division.

GEORGE C. MANN, A.B., Vocational Instructor, Extension Division.

JOE MILLS, Athletic Coach.

CLEOPHILE B. DEAN, Ph.D., Assistant in English Literature.

SYDNEY INGRAHAM, Assistant in Romance Languages.

* Resigned March 15, 1919.

† Died October, 1918.

‡ Appointed February, 1919.

§ Appointed March 1, 1919.

|| Appointed March 1, 1919 and resigned April 1, 1919.

¶ Appointed April, 1919.

*MAUDE E. ROWLAND, A.B., Assistant in Romance Languages.

†EDWIN D. HULL, M.S., Assistant in Biology.

‡RALPH HUBBARD, A.B., Assistant in Museum and in Biology.

§WINIFRED WHITE, A.B., Assistant in Museum and in Biology.

LEROY A. MACCOLL, Assistant in Physics.

NEWTON J. RICE, A.B., Assistant in Education.

†HAROLD P. MUNCK, A.B., Assistant in Economics.

¶FLOYD N. HOUSE, A.B., Assistant in Economics.

FRANK C. KENNELLY, M.D., Assistant in Medicine.

ELMERT T. BOYD, M.D., Assistant in Ophthalmology.

†WILLIAM M. BANE, M.D., Assistant in Oto-laryngology.

SARA BRANHAM, Assistant in Pharmacology and Bacteriology.

HERMAN ESCHENBURG, Assistant in Civil Engineering.

WENDELL T. HEDGCOCK, Assistant in Civil Engineering.

ALBERT S. ANDERSON, Assistant in Engineering Mathematics.

DONALD H. TIPPETT, Assistant in Engineering English.

†FRED E. HAGEN, A.B., Secretary and Registrar.

F. GRACE HALL, A.B., Acting Registrar.

RUTH N. CRARY, A.B., Acting Assistant Registrar.

FRANK H. WOLCOTT, B.S., Secretary of the Board of Regents and Bursar.

ROLAND L. DICKENSHEETS, Assistant Bursar.

||C. HENRY SMITH, Ph.B., Librarian.

xEMMA A. JACKSON, A.B., Assistant Librarian.

ELIZABETH F. SELLECK, A.B., Assistant Librarian.

MILDRED LYMAN, Assistant Librarian.

GRACE BLACK, Assistant in Engineering Library.

CICELY SHERWOOD, Law Librarian.

H. SPENCER GELTZ, Secretary Teachers Appointments Office.

ALMA GABRIEL, A.B., Secretary of the Bureau of Correspondence Instruction.

**BURR A. BEARD, Captain, U. S. A., Commandant Students' Army Training Corps.

JOSEPH KLEMME, Superintendent of Buildings and Grounds.

* Resigned March 1, 1919.

† On leave of absence for war service.

‡ Resigned December 1, 1918.

§ Appointed December 1, 1918.

¶ Appointed April 14, 1919.

|| On leave of absence for war service, autumn quarter, 1918-1919.

x Acting Librarian, autumn quarter, 1918-1919.

** From November 1, 1918 to December 31, 1918.

GENERAL STATEMENT

HISTORY

The University of Colorado was incorporated by an act of the First Territorial Legislature of Colorado, in 1861, and the location fixed at Boulder. The act states that the University was "designated to promote and encourage the diffusion of knowledge, in all the branches of learning, including the scientific, literary, theological, legal and medical departments of instruction". A board of trustees with needful powers was constituted, but never met to transact business. A second act of the year 1870 revived the project of a university at Boulder and reconstituted the board of trustees. In 1872, three public-spirited citizens of Boulder gave the University fifty-two acres of land adjoining the city. In 1874, the Territorial Legislature appropriated \$15,000 to the University, conditioned on the raising by the trustees of an equal amount "by subscription, donation, or otherwise". The trustees having met this condition, the first installment of the appropriation was paid on June 7, 1875. Plans for the erection of a building were then made. In 1875, Congress "set apart and reserved for the use and support of a state university" seventy-two sections of public lands. The Constitution of Colorado, adopted in 1876, made the "University at Boulder" an institution of the State, thus entitling it to the lands appropriated by Congress, and provided for its management and control, as follows: "The Board of Regents shall have the general supervision of the University, and the exclusive control and direction of all funds of, and appropriations to, the University". The University is supported by the proceeds of a fractional mill tax and by special appropriations.

The Institution was opened September 5, 1877, with two departments, Preparatory and Normal. After a few years the Normal department was dropped, and in 1907 the Preparatory department was discontinued. The University comprises the following schools and colleges: College of Liberal Arts, 1878; School of Medicine, 1883; Graduate School, 1892; School of Law, 1892; College of Engineering, 1893; Summer Session, 1904; College of Commerce, 1906; College of Education, 1908; College of Pharmacy, 1911; University

Extension Division, 1912; and School of Social and Home Service, 1912, changed to the College of Home Economics and Social Service in 1918. The Summer Session was increased to a full quarter in 1919.

SITUATION

The University is situated at Boulder, a city of 12,000 inhabitants, about thirty miles north from Denver. The Denver and Inter-urban Railway, with hourly electric service, and the Colorado and Southern and Union Pacific railways connect Boulder and Denver.

BUILDINGS AND GROUNDS

The University campus comprises sixty acres; Stratton Field, northeast of the main campus and about one-quarter mile distant, twelve acres. The University buildings are Heating, Lighting and Power Plant, Macky Auditorium, Library, Woodbury Hall, Women's Building, Men's Building, Gymnasium, President's House, Liberal Arts Building, Hale Science Building, Chemistry Building, New Science and Museum Building, Engineering I, Engineering II, Shops Building, Medical Building, Henry S. Denison Memorial Building, Hospital, Nurses' Home, Isolation Hospital, Simon Guggenheim Law Building, Pharmacy Building. Of these, nineteen have been erected by the State, and the Macky Auditorium, the Henry S. Denison Memorial Building, and the Simon Guggenheim Law Building have been erected by private benefaction. For the use of the third and fourth years of the School of Medicine, a building located at Thirteenth and Welton Streets, Denver, is rented.

LIBRARY

The Library numbers 114,931 bound volumes, 23,000 pamphlets, and 1,869 maps. Direct access to the shelves is the rule. The main library is open to all during term time from 7:45 a. m. to 10:00 p. m., week days, except Friday and Saturday, when the closing hour is 9:00 p. m. Vacation hours are 9:00 a. m. to 5:00 p. m., week days.

The main library occupies the central portion of the Library Building; 83,370 books are shelved within its walls. Three hundred people may be seated at the different reading tables at one time. A card catalogue numbering upwards of 233,768 cards, giving authors and subjects, directs seekers to books or portions thereof.

Departmental libraries are maintained for Biology, Chemistry, Denison Research Laboratory, Education, Engineering, Geology, German, Law, Mathematics, Museum, Music, Pharmacy, Physics, and School of Medicine (Denver). Through this system 31,561 volumes upon special subjects are deposited in the building where the particular subject is taught.

Through library extension, books not in actual demand for resident use may be borrowed by citizens of Colorado.

ENTRANCE

Persons intending to enter the University must present their credentials to the Registrar before registration. Certificates from accredited high schools, signed by the proper authorities and indicating the character and extent of the work completed, are accepted. Certificates of the New York State Board of Regents and similar bodies and of the College Entrance Examination Board and credits of a non-accredited high school may be accepted provisionally, full standing being conditional on the subsequent work of the student concerned.

Students seeking advanced standing must present in addition to the above an official record of their college or university work, a marked catalogue, and a letter of honorable dismissal from the institution last attended. Real equivalents will be accepted. Advanced standing will not be definitely determined until the student has completed at least one quarter's work in this University.

No statement of the entrance status of an applicant can be given by the Registrar until he has before him complete credentials.

Students are earnestly advised to be present at the opening of a quarter. In the School of Medicine no student will be allowed to enter later than the second Monday after the opening of the University.

An information bureau for the convenience of new students may be found in the Registrar's office in the Macky Auditorium. The rooms of the Christian Associations, and of the Women's League are open for the reception of students during the opening days of the University.

The Registrar's office is open for registration, beginning Friday morning preceding the opening day of the University. All students are requested to register as soon as possible. Students continuing

work in the department in which they have been previously enrolled, register first with the Dean and then with the Registrar. New students, and old students transferring from one department to another, register first in the Registrar's office.

REQUIREMENTS FOR ADMISSION

THE COLLEGE OF LIBERAL ARTS, COLLEGE OF COMMERCE, COLLEGE OF EDUCATION, AND COLLEGE OF HOME ECONOMICS AND SOCIAL SERVICE

Candidates for admission are expected to be graduates of a standard four-year high or preparatory school and *must present fifteen acceptable units*. Applications from candidates who have completed an equivalent amount of work under other conditions will be considered on the merits of each case; in general, such candidates will be expected to pass entrance examinations.

Certificates of moral character may be required from all applicants.

Entrance conditions will not be allowed beyond one unit, and then only upon recommendation of the principal of the school from which the candidate graduated. This applies to all students, including graduates of commercial and other courses wherein some of the subjects are not accepted for University matriculation.

Candidates with fifteen acceptable units, coming from a standard four-year high or preparatory school, who are not graduates, may be admitted on the recommendation of the principal.

A unit course of study is defined as a course covering a school year of not less than thirty-six weeks, with five periods of at least forty-five minutes each per week, two periods of manual training or laboratory work being equivalent to one period of classroom work. This is equivalent to one hundred and eighty actual "periods" per unit. The fifteen units are equivalent to thirty "points".

The fifteen units should be distributed as follows:

Mathematics	2
Languages other than English.....	4
English	3
History	2
Science	2
Electives	2

Electives may be chosen from the following: Mathematics, 2; Greek, 2; Latin, 2; French, 2; German, 2; Spanish, 2; History, 2; English, 1; Science, 2; Psychology, $\frac{1}{2}$. From the following group, subject to special accrediting by the University, not more than three units: Drawing, 1; Manual Arts, 2; Domestic Science, 1; Agriculture (Introductory Science), 1; Commercial Geography, $\frac{1}{2}$; Commercial Law, $\frac{1}{2}$; Elementary Economics, $\frac{1}{2}$.

Students who do not present the units specified in the above table of requirements for admission, but who do present fifteen acceptable units, will be regularly admitted. Such students will, however, be required to elect in College courses that will fulfill the requirements specified, e. g., if a student enters with but two units of Language other than English, then he must include in his College course the equivalent of two units in foreign language. This provision materially widens the scope of electives that will be accepted for College entrance.

1. Half units will not be accepted in Physics and Chemistry.

2. Students who present three units of Greek are required to present only one unit of Science, but they must have a total of fifteen units.

3. For the foreign language requirement not more than two languages can be presented. Four units of Latin are preferred, at least two units urgently advised.

Special Students.

Persons of mature years, even if they are unable to meet the entrance requirements, may be admitted to certain courses on the approval of the departments concerned and the Committee on Courses. In no case will applications be considered from persons who are not twenty-one years of age. Students should not actually come to the University in the hope of entering as special students unless they have been assured *in writing* by the Registrar that there is a reasonable prospect of their being admitted.

THE COLLEGE OF ENGINEERING

Candidates for admission are expected to be graduates of a standard four-year high or preparatory school, or to have completed a corresponding amount of work under other conditions.

While the regular time for entrance to the College of Engineering is the opening of the autumn quarter, the subjects are repeated

in such a manner that students entering at the opening of other quarters may proceed with their work without loss of time.

Students may be admitted on the passing of satisfactory examinations or on the presentation of certificates from an accredited high school. Applications from graduates of a non-accredited school will be considered as the merits of each case may warrant; but full standing in such instances shall be conditional upon the subsequent work of the student concerned.

Certificates of moral character may be required from all applicants for admission.

Fifteen units are required for admission. Entrance conditions will not be allowed beyond the equivalent of two units. For definition of "unit," see page 27.

The fifteen units should be distributed as follows:

Mathematics (Algebra, Plane and Solid Geometry)....	3
Languages other than English.....	2
English	3
History	2
Physics	1
Electives	4

15

Electives may be chosen from the following: Mathematics, 2; Greek, 3; Latin, 3; French, 3; German, 3; Spanish, 3; History, 2; English, 1; Science, 3; Civics, 1; Economics, $\frac{1}{2}$; Psychology, $\frac{1}{2}$. From the following group, subject to special accrediting by the University, not more than three units: Drawing, 2; Manual Training, 2; Agriculture (Introductory Science), 1; Commercial Geography, $\frac{1}{2}$; Stenography, 1; Bookkeeping, 1; Commercial Law, $\frac{1}{2}$. While Chemistry is not required for entrance, it is very desirable that students take this course in high school.

Special Students.

Mature candidates, more than twenty-one years of age, who have had satisfactory preparation in algebra, geometry, physics, and English may be admitted as special students. Special students pursue the regular course and are required to remove their entrance deficiencies within two years. No one may enroll in the College of Engineering as a special student for more than two years except on the approval of the Dean and a vote of the Faculty.

THE GRADUATE SCHOOL

Graduates of any college or scientific school of equal rank with the University of Colorado are admitted upon presentation of certificates of graduation. Students from other institutions should present their credits to the Registrar for rating. See also, page 189.

THE SCHOOL OF MEDICINE

Candidates for admission must fulfill the entrance requirements of the College of Liberal Arts, as given in detail on page 27, and present in addition ninety term hours (or sixty semester hours) of collegiate work in a college approved by a recognized accrediting agency. No part of the ninety term hours may be made up of credit in physical education. The following subjects are prescribed: one year of Latin, one year each of college chemistry, physics, biology, a modern foreign language, English, and organic chemistry. It is desirable that work in inorganic chemistry include qualitative and quantitative analysis or both. No entrance conditions are allowed.

Not more than thirty students will be admitted to any class.

Certificates of moral character may be required from all applicants for admission.

Students are earnestly advised to be present at the opening of the session. For the session 1919-1920, no student will be allowed to enter later than Monday, October 13, 1919.

Special Students.

Mature students, not candidates for the degree of M.D., who can give satisfactory evidence of their qualifications to pursue certain advanced courses, may be admitted as special students. No student should come to the University with the expectation of entering as a special student unless he has been previously assured *in writing* by the Registrar that there is a reasonable prospect of his being admitted.

THE SCHOOL OF LAW

Candidates for admission must fulfill the entrance requirements of the College of Liberal Arts, as given in detail on page 27, including at least two units of Latin; and present in addition, two years of college work estimated at ninety term hours, in addition to the required physical education. The college work must include a thor-

ough course in English Political or Constitutional History, and the equivalent of at least eight hours of English Composition and Rhetoric.

All candidates must present certificates of good moral character.

Special Students.

Persons twenty-one years of age, who cannot satisfy the admission requirements but are qualified to pursue special work, may be admitted to certain courses, though not as candidates for a degree, on approval of the proper committee of the faculty. Special students may be excluded at any time after entrance for unsatisfactory class work. Students should not actually come to the University in the hope of entering as special students unless they have been assured *in writing* by the Registrar that there is a reasonable prospect of their being admitted.

THE COLLEGE OF PHARMACY

Candidates for admission are expected to be graduates of a standard four-year high or preparatory school and *must present fifteen acceptable units*. Applications from candidates who have completed an equivalent amount of work under other conditions will be considered on the merits of each case; in general, such candidates will be expected to pass entrance examinations.

Certificates of moral character may be required from all applicants.

Entrance conditions will not be allowed beyond one unit and then only upon recommendation of the principal of the school from which the candidate graduated. This applies to all students including graduates of commercial and other courses wherein some of the subjects are not accepted for University matriculation. Entrance conditions must be removed before entering upon the work of the second year.

Candidates with fifteen acceptable units, coming from a standard four-year high or preparatory school, who are not graduates, may be admitted with the consent of the principal.

It is highly important that entrance Chemistry be completed before entering the College of Pharmacy. Students conditioned in this subject will probably require one or more additional quarters of residence at the University. Latin is difficult to make up and at

least one year should be completed before the student begins his college course.

For definition of "unit," see page 27.

The fifteen units should be distributed as follows:

Mathematics	2
Latin	1
English	3
History	2
Science (one unit of Chemistry required).....	2
Electives	5

15

Electives may be chosen from the following: Mathematics, 2; Greek, 2; Latin, 3; French, 2; German, 2; Spanish, 2; History, 2; English, 1; Science, 2; Psychology, $\frac{1}{2}$. From the following group, subject to special accrediting by the University, not more than three units: Drawing, 1; Manual Arts, 2; Domestic Science, 1; Agriculture (Introductory Science), 1; Commercial Geography, $\frac{1}{2}$; Elementary Economics, $\frac{1}{2}$; Commercial Law, $\frac{1}{2}$; Bookkeeping, $\frac{1}{2}$.

Half units will not be accepted in Physics and Chemistry.

Special Students.

Persons twenty-one years of age, who cannot satisfy the admission requirements but are qualified to pursue special work, may be admitted to certain courses on approval of the proper committee of the faculty. Students should not actually come to the University in the hope of entering as special students unless they have been assured *in writing* by the Registrar that there is a reasonable prospect of their being admitted.

ACCREDITED SCHOOLS*

Akron	Breckenridge	Castle Rock
(Washington	Brighton	(Douglas County)
County)	Brush (Union)	Central City
Alamosa	Buena Vista	(Gilpin County
Arvada	Burlington	Union)
Aspen	Canon City:	Cheyenne Wells
Berthoud	Canon City	(Cheyenne
Boulder (State	South Canon	County)
Preparatory)		

* Alphabetically by postoffices.

Colorado City	Greeley	Ouray (Ouray
Colorado Springs	Gunnison (Gunnison	County)
Cripple Creek	County)	Palisades:
Debeque	Gypsum	Mount Lincoln
Delta	(Eagle County)	Palisade
Denver:	Holly (Union)	Paonia
East Side	Holyoke (Phillips	Pueblo:
Manual Training	County)	Centennial (Dis-
North Side	Hotchkiss	trict No. 1)
South Side	Idaho Springs	Central (District
West Side	Julesburg (Sedg-	No. 20)
St. Mary's Acad-	wick County)	Rifle (Union)
emy	Lafayette	Rocky Ford
The Wolcott School	La Junta	Saguache (Saguache
Durango	Lamar (Union)	County)
Eaton	La Porte (Cache	Salida
Englewood	La Poudre)	Silverton
Flagler	Las Animas (Bent	Steamboat
Florence	County)	Springs
Fort Collins	Leadville	Sterling (Logan
Fort Morgan	Littleton	County)
Fountain	Longmont	Telluride
Fowler	Louisville	Trinidad
Fruita (Union)	Loveland	Victor
Georgetown	Mancos	Walsenburg (Huer-
Glenwood Springs	Manitou	fano County)
(Garfield County)	Meeker (Rio Blanco	Wheatridge
Golden	County)	Windsor
Grand Junction:	Monte Vista	Wray (Yuma
Fruitvale	Montrose (Montrose	County)
Grand Junction	County)	

TUITION AND FEES*

INCIDENTAL FEE.

Annual fee for all students in all the colleges and
schools (except the Denver Division of the School
of Medicine, \$3.00).....\$ 6.00

* Special breakage charges may be collected whenever necessary in
any laboratory department of the University.

COLLEGES OF LIBERAL ARTS, COMMERCE, EDUCATION, AND HOME
ECONOMICS AND SOCIAL SERVICE.

Matriculation (paid once).....	\$ 5.00
Tuition, resident, per quarter.....	6.00
Tuition, non-resident, per quarter.....	10.00
Laboratory fees, collected <i>each quarter</i> from students who take the particular courses. [These fees in- clude breakage deposits, etc., as well as charges for material.]	
Physics, all laboratory courses, 33 $\frac{1}{3}$ per cent. re- turnable at end of course.....	3.00
Chemistry (lecture hours are not counted):	
General Inorganic, per credit hour, 25 per cent. returnable	2.75
Qualitative Analysis, per credit hour, 25 per cent. returnable	2.75
Organic Preparations, per credit hour, 25 per cent. returnable	2.75
All other courses, per credit hour, 25 per cent. returnable	1.75
Biology:	
Botany, per credit hour.....	\$.75
Microbiology, per credit hour.....	2.00
Plant Physiology (lectures not counted), per credit hour	1.50
Zoology, per credit hour.....	1.00
Entomology, per credit hour.....	.75
Animal or Human Physiology (lectures not counted), per credit hour	2.00
Vertebrate Anatomy, per credit hour.....	1.50
Education:	
Pedagogical library fee for each pedagogical course requiring duplicate books.....	1.00
Psychology:	
Experimental Psychology	1.00
Geology:	
General Geology, per year, 25 per cent. return- able	5.00

Mineralogy:

Economic Mineralogy, 25 per cent. returnable..	\$ 4.00
Advanced Mineralogy, 25 per cent. returnable..	4.00
Fire Assaying, 25 per cent. returnable.....	10.00

Geography:

Physiography, for field trips and maps, unused part returnable	5.00
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Home Economics:

Garment Making	1.00
Dressmaking	1.00
Textiles	2.00
Elementary Foods	3.00
Selection and Preparation of Foods.....	4.00
Principles of Cookery.....	5.00
Nutrition	5.00

Art:

Color and Design (66⅔ per cent. returnable)..	5.00
The House, Its Furnishing and Decoration....	1.00

COLLEGE OF ENGINEERING.

Matriculation (paid once)	5.00
Tuition, resident, per quarter.....	6.00
Tuition, non-resident, per quarter.....	10.00
For laboratory fees in Engineering courses, see page 138.	

GRADUATE SCHOOL.

Matriculation (not required of graduates of this University or of instructors, paid once).....	10.00
Diploma fee	10.00
Tuition, per year, for courses in Ophthalmology.....	30.00

SCHOOL OF MEDICINE.

Tuition, resident, per quarter.....	30.00
Tuition, non-resident, per quarter.....	40.00
Laboratory deposit, per year, paid by all first and second year students to cover breakage and excess- ive and unreasonable use of material.....	10.00

SCHOOL OF LAW.

Tuition, per quarter.....	18.00
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COLLEGE OF PHARMACY.

Matriculation (paid once)	5.00
Tuition, resident, per quarter.....	6.00
Tuition, non-resident, per quarter.....	10.00

Laboratory fees in Pharmacy per credit hour of laboratory work, 25 per cent. returnable.....	\$ 5.00
Physiology, 25 per cent. returnable.....	5.00
Pharmacology, 25 per cent. returnable.....	10.00
For fees in other courses see Chemistry, Botany, etc.	

SUMMER QUARTER.

For Summer Quarter fees, see page 261.

EXTENSION FEES.

For Extension fees, see pages 281, 283.

NOTE—Matriculation fees will not be refunded. Students withdrawing from the University will be charged 25 per cent. of the quarter's tuition and incidental fee for each week for the first two weeks of attendance in any quarter. After that time no refund will be made.

LIVING EXPENSES

The average price of board, room, light, and fuel may be placed at from \$8.00 to \$14.00 a week. Day board in boarding houses and city restaurants varies from \$6.50 to \$9.00 a week. The rent for furnished rooms varies from \$6.00 to \$20.00 a month. As a rule a room costing more than \$10.00 a month may be occupied by two students. Facilities for light housekeeping enable students to lessen expenses materially. Boarding clubs are organized and are open to new students.

The following table shows the estimated annual expenses of students of the University, excluding clothing and traveling expenses; the expense varies with the course pursued, and also depends, naturally, upon the tastes and habits of the individual.

Board	\$220.00 to \$306.00
Room	40.00 to 170.00
Books, instruments, and stationery.....	10.00 to 60.00
Laundry	9.00 to 36.00
Tuition and fees.....	24.00 to 156.00
Incidentals	25.00 to 75.00

\$328.00 to \$803.00

The items for books and fees are high in the second table because they are estimated on the basis of a liberal allowance for students in the Schools of Medicine and Law.

The University has no dormitories and no boarding facilities. (See page 39.)

Information concerning the location of rooming and boarding places may be had at the office of the Registrar or from the secretaries of the University Christian Associations. Women students should consult also the Dean of Women. Inquiries concerning expenses should be directed to the Registrar.

EMPLOYMENT

While the University does not undertake to find employment for students, yet every assistance possible is given by University officers. The Registrar cooperates with the secretaries of the two Christian Associations, each of which conducts an employment bureau.

No general information can be given concerning employment because the personal capacity, efficiency, and energy of the student concerned and the time which he can devote to outside work are controlling factors.

Prospective students should not come to the University unless they have, at the time of entering, enough money to pay a reasonable part of the first quarter's expenses. A few students are able to earn enough money to pay all of their expenses, but the attempt to do this frequently involves a sacrifice of health or scholarship.

Inquiries concerning employment should be directed to the Registrar.

SCHOLARSHIPS

HIGH SCHOOL HONOR SCHOLARSHIPS

Scholarships, consisting of a remission of the annual tuition (\$18.00) for four years in the Colleges of Liberal Arts, Engineering, and Pharmacy, are granted to graduates of four-year high schools of Colorado, upon recommendation of the principal, according to the following plan:

To graduating classes of ten or less one scholarship to either the first or second in rank; to classes of from ten to twenty-five, one scholarship to one of the first three in rank; to classes of twenty-five to fifty, two scholarships to any of the first six in rank; to classes of fifty to one hundred, three scholarships to any of the first nine in rank; to classes of over one hundred, four scholarships to any of the first twelve in rank.

A scholarship is forfeited whenever the student's yearly average falls below 80 per cent.

THE EDWARD G. STOIBER SCHOLARSHIP

The Edward G. Stoiber Scholarship Fund consists of the principal sum of \$2,000 held in trust, the income of which is given each year to some student in the School of Medicine, designated by the donor or by the officers of the School. This scholarship was established in The Denver and Gross College of Medicine by Mrs. Edward G. Stoiber in memory of the late Edward G. Stoiber. Under the terms of the merger agreement between The Denver and Gross College and the University of Colorado this fund has been transferred to the Regents, to be held in perpetuity for the purposes specified.

THE GARDINER-ODELL SUMMER SCHOLARSHIP IN BIOLOGY

The late Mrs. Maud Gardiner Odell, B.S., 1894, through her daughter, Dorothy Gardiner, A.B., 1917, left to the University \$1,000 for the Biology department. The sum is invested in Liberty Bonds and the annual income used for a Summer scholarship. The student accepting this scholarship must pursue work in botany or zoology during the Summer, and it should be, preferably, work of a nature that can be best done in the Summer months. Applications are to be made to the Professor of Biology before April 1 of any year. The first award will be made in 1919.

PRIZES

THE BENNETT PRIZE

The Bennett prize is awarded annually at Commencement for the best essay on *The Principles of Free Government*. Any student in the University may compete. The prize awarded is the income of the sum of \$400 presented to the Regents of the University by Hon. William J. Bryan, Trustee for Philo Sherman Bennett.

LOAN FUNDS

WOMEN'S LEAGUE LOAN FUND

This fund consists of the principal sum of about \$1,500. Loans are made to women students by the officers of the Women's League.

THE WILLIAM PORTER HERRICK MEMORIAL FUND

This fund, the gift of Mrs. Ursula D. Herrick in memory of her husband, the late William Porter Herrick, consists of the principal sum of \$5,000. The proceeds of this fund are awarded by the Regents of the University "in aid of such worthy and promising undergraduate students of the University, of either sex, as the President of said University may from time to time designate; provided, however, that no student who uses tobacco in any form, or who uses intoxicating liquors of any kind as a beverage shall participate in the benefits of this fund".

THE PHIPPS LOAN FUND

The Phipps Loan Fund of \$5,000 was established in 1918 by Mr. L. C. Phipps and Mr. L. C. Phipps, Jr. Several loans are available from it each year for the benefit of promising students of the second, third or fourth years of the School of Medicine who are in need of such assistance to enable them to continue their medical education.

UNIVERSITY HOSPITAL

The University Hospital provides hospital advantages for students of the University. A flat rate of \$12.00 a week is made for students in the general wards, and \$17.00 a week in the isolation hospital. For further information concerning the University Hospital, see page 233.

SUPERVISION OF WOMEN STUDENTS

DEAN OF WOMEN

The Dean of Women directs the interests of women students. She regulates social activities for both men and women and is a member of the faculty committee which has direction over all student organizations and extra-curricular activities. The houses in which women room and board are under her supervision.

HOMES FOR WOMEN

Since there is no residence hall for women under the management of the University, suitable homes are provided in private families and in rooming houses. No woman student is allowed to live in any rooming house which is not on the University list accredited by the Dean of Women.

HEALTH OF WOMEN

The health of the women students is under the supervision of the Dean of Women and the Medical Adviser to Women in cooperation with the Department of Physical Education. The Medical Adviser is a woman physician. A medical and physical examination, given by the Medical Adviser and the Director of Physical Education for Women, is required of all women taking work in Physical Education. A series of lectures on personal and social hygiene is required of all freshman women and is open to all other women students. In the University Hospital provision is made for the care of students of the University. See page 234.

WOMEN'S BUILDING

The Women's Building furnishes headquarters for the women of the University. Here are the offices of the Dean of Women, the Women's League, and the Young Women's Christian Association. There is a hall for meetings and entertainments.

WOMEN'S LEAGUE

The Women's League is an association composed of the undergraduate women of the University, of *alumnæ*, and of the wives of members of the faculties. Its purpose is two-fold: first, to promote the intellectual and social welfare of the women of the University; and second, to establish a loan fund for the benefit of women students.

VOCATIONAL GUIDANCE

Instruction concerning vocations open to women and concerning University courses leading to such vocations is given during the college year. This instruction is given through lectures by experts and through personal interviews conducted by the Secretary of the Collegiate Bureau of Occupations, which has been established by the Denver Chapter of the Association of Collegiate *Alumnæ*.

STUDENT ASSEMBLY

The period from 11:00 to 12:00 on Tuesday is set apart for assembly of students. During this period no class or lecture work is conducted. A brief address is given by a member of the faculty or by some speaker invited for the occasion. Attendance is required.

UNIVERSITY PUBLICATIONS

1. Catalogue, containing general information about the University and its separate departments.

2. Summer Quarter Announcement.

3. The special announcements of the departments of Medicine, Law, Engineering, and Pharmacy.

4. The biennial report of the Regents of the University, recording the progress of the Institution during the previous biennial period, and showing the University budget of receipts and expenditures for the same period.

5. The University of Colorado Studies, published at irregular intervals, and containing original contributions by members of the University faculties.

6. University Extension Bulletins on various subjects of investigation.

7. The Booklet of Views, containing half-tone cuts of the buildings and grounds.

These publications may be obtained by application to the Registrar of the University.

STUDENT AND ALUMNI PUBLICATIONS

The Silver and Gold, a weekly paper, named after the University colors, is published by the students.

The Coloradoan, an annual, is published annually by the Associated Students.

The Colorado Engineers' Magazine is published quarterly by the students of the College of Engineering.

The Colorado Alumnus, issued monthly, is the official publication of the Associated Alumni.

The Journal of Engineering, a quarterly, is published by the alumni and the students of the College of Engineering.

UNIVERSITY SCIENTIFIC SOCIETY

The University Scientific Society affords a common meeting ground for all those interested in scientific subjects. Regular meetings, open to the public, are held every Monday evening at eight o'clock. The papers read before these meetings are intended to set before the members some of the results of modern investigation in literature, art, history, and science.

ASSOCIATED STUDENTS

The student body is organized into an association known as "The Associated Students of the University of Colorado". Through this Association the students act collectively in all their University relations. There are eight executive boards—the Commission, the Men's Athletic Board, the Women's Athletic Board, the Debating Board, the Board of Publications, the Financial Board, the Dramatic Board, and the General Board. The membership of these boards consists of faculty representatives appointed by the President of the University and student members elected by the students. The Commission controls general interests. The General Board has charge of all insignia, interprets the Constitution and proposes and ratifies amendments thereto, and employs and controls the general manager who has direct control of, and responsibility for, every student enterprise of general interest. The other boards cooperate with the general manager and determine the policy that shall be followed by him in the respective activities indicated by their names. By the payment of a \$6.00 fee any student, alumnus, or member of the faculties is entitled to admission to all local contests, games, or other events under the Association's auspices. Provision is made in the Constitution for a careful supervision of student funds, for the recall of any officers, and for the initiative and referendum.

ORATORICAL AND DEBATING INTERESTS

All public debates and oratorical contests are held under the management of the Debating Board of the Associated Students. This board consists of three faculty and three student members.

Annual debates are held with four other state universities. The teams for these debates are chosen by contest. The teams and alternates constitute a squad of twenty men, who are under the direct supervision of the instructor in debating.

The A. S. U. C. conducts each year a contest in oratory in which cash prizes are offered.

ATHLETICS

The University aims, primarily, to stimulate interest in the greatest possible variety of athletics for both men and women, with suitably graded exercises for all students; and, secondarily, to develop highly specialized intercollegiate sports for men. Walking and mountain climbing are popular forms of recreation, and the cli-

mate is such as to permit out-of-door exercise during most of the year.

Athletics are placed upon a stable financial foundation under the organization of the Associated Students of the University. General supervision and direction of athletics for men is vested in the Athletic Board, and for women in the Women's Athletic Board. These Boards are each composed of three members of the faculty, appointed by the President of the University, and three student members, who are officials of the Associated Students. The Boards are responsible in all things to the University Senate. All students who participate in athletics are required to take a medical and physical examination.

ATHLETICS FOR MEN

The following branches of organized athletics are offered for men: Football, baseball, basketball, soccer football, tennis, rifle shooting, cross-country running, track and field sports, with intercollegiate, interclass, and interfraternity competition.

The University has a chapter of the national athletic society, Sigma Delta Psi, membership in which is open to men who successfully complete fourteen athletic requirements.

ATHLETICS FOR WOMEN

The following branches of organized athletics are offered for women: Basketball, baseball, volley ball, tennis, golf, archery, and track. Annual tournaments are held in tennis, golf, and archery, and interclass games are played in basketball and baseball. A field day of women's athletics is held biennially.

WOMEN'S ATHLETIC ASSOCIATION

The Women's Athletic Association is composed of all women students of the University. The object of this Association is to promote and further the interests of intra-mural athletics for women, thereby furthering health, democracy, and sportsmanship in the student body. In addition to the regular sports the association organizes tramps each week-end. Athletic points for university letters are given for all elective sports, including tramping.

MUSICAL ORGANIZATIONS

The University Glee and Mandolin Clubs are open to men of the University. Members are selected by competitive examination. A tour is made each year.

The University Orchestra is open to students and members of the faculty desiring to study standard orchestral works.

The University Band furnishes music for the various general University functions.

The Women's Instrumental Club is open to women of the University.

All musical organizations are under the direction or general supervision of the Professor of Music.

RELIGIOUS ORGANIZATIONS

Y. M. C. A. AND Y. W. C. A.

The Young Men's Christian Association and the Young Women's Christian Association have organizations in the University, which are open to members of the faculties and to students of all departments.

Religious services and meetings for the presentation of the moral and religious problems of the day are held by each Association. Classes for the study of the Bible and world-wide missions are conducted by each under competent leadership. Vesper services are held in the Chapel. In providing frequent social gatherings the Associations render important service.

Resident secretaries are employed by the Associations, and their services are at the disposal of prospective students and their friends. The Associations annually publish a Student and Faculty Directory.

The Y. W. C. A. conducts a board and room register, a book exchange, and a self-help bureau for the women at the opening of each school year. The Y. W. C. A. offices are in the Women's Building and are open at all times to the women of the University.

The Y. M. C. A. has taken over the property and most of the social activities of the Colorado Union, and now occupies the cottage on the campus formerly occupied by the Union, thus assuming a much larger part in the life of the University than ever before. Permanent employment bureau, information bureau, and headquarters for men are maintained in the cottage. Reading, writing and amusement rooms are open at all times.

Student pastors are maintained on the Campus by several Churches for the benefit of the entire student body, as well as for the benefit of the students of their own denominations, working in harmony with the Y. M. C. A. and Y. W. C. A.

NEWMAN SOCIETY

The Newman Society is the local branch of the Catholic Students' Association of America. Membership is open to all Roman Catholic students. Its purposes are both religious and social.

HONOR SOCIETIES

Four honor societies, to which students of high scholastic standing are eligible, have chapters at the University of Colorado. Phi Beta Kappa elects to membership senior students in the College of Liberal Arts. Sigma Xi offers membership to graduate and undergraduate students who have shown special ability in scientific investigations. Tau Beta Pi is a technical society, selecting members from students in the College of Engineering. Kappa Delta Pi elects to membership students in the College of Education.

STUDENT LITERARY SOCIETIES AND CLUBS

Literary societies and debating clubs are organized and conducted each year by the students.

The Scribblers' Club aims to develop talent in original literary work. Meetings are held every two weeks, the programs consisting entirely of poems, essays, sketches, or stories written by the members. Membership is open to both men and women.

Le Cercle Français is an informal club which meets every two weeks for the purpose of obtaining practice in the French language, which is used exclusively. Plays are read and performed, various games are played, and the work of the classroom is supplemented in every possible way.

El Circulo Español, like Le Cercle Français, meets every other week. The object of the club is the same, to acquire practice in the spoken language and to stimulate interest in things Spanish. The meetings of the two clubs do not conflict.

The University of Colorado Menorah Society is a member of the Intercollegiate Menorah Association. Its object is the study and advancement of Jewish culture and ideals. Membership is open to any student of the University interested in these subjects.

The Players' Club is organized for the purpose of promoting dramatic study and gives one or more public presentations during the year.

The Civil Engineers' Society, the Electrical Engineers' Society (a student branch of the American Institute of Electrical Engineers),

and the University of Colorado branch of the American Society of Mechanical Engineers have been organized by the students in the College of Engineering. These societies meet every two weeks. In each original papers on questions of technical interest are presented and discussed. These three societies joined as "The Associated Engineering Societies" publish the Journal of Engineering. The Colorado Engineers' Magazine is published by the students of the College of Engineering.

ASSOCIATED ALUMNI

The Associated Alumni of the University of Colorado is composed of all the graduates of the University of Colorado and of all other persons who have been in residence at the University of Colorado for at least one year, as members of the faculty, officers or students. The organization aims to promote the best interests of the University of Colorado and to unite the alumni for mutual advantage. In furtherance of these objects it maintains a permanent secretary in Boulder and publishes a monthly magazine known as "The Colorado Alumnus". The legislative and executive powers are vested in the Alumni Senate, which is made up of senators elected from the alumni at large, and representatives of the nineteen local alumni organizations in the principal towns and cities of Colorado and in many cities in other states. The Alumni Senate meets in Boulder in October on the Annual Home-Coming Day, and in June at Commencement.

TEACHERS APPOINTMENTS OFFICE

The Teachers Appointments Office, in cooperation with the United States Employment Service, of which it is essentially a branch office, makes every effort to place students and graduates of the University in the positions for which their general education and professional preparation have fitted them. The office, which is conducted by a secretary under the general supervision of a Senate Committee on Recommendation of Teachers, maintains communication with superintendents and boards of education with reference to vacancies, and invites correspondence from school authorities who are in need of professionally trained teachers. Students of the University who intend to teach, and graduates of the University who are now engaged in teaching and who wish to secure better positions, should register with the secretary of the office.

COLLEGE OF LIBERAL ARTS

FACULTY

GEORGE NORLIN, Ph.D., President of the University.

FRED B. R. HELLEMS, Ph.D., LL.D., Dean; Professor of Latin.

J. RAYMOND BRACKETT, Ph.D., Dean of the Graduate School; Professor of Comparative and English Literature.

IRA M. DELONG, A.M., LL.D., Professor of Mathematics.

CHARLES C. AYER, Ph.D., Professor of Romance Languages.

FRANCIS RAMALEY, Ph.D., Acting Dean of the College of Pharmacy; Professor of Biology.

MELANCHTHON F. LIBBY, Ph.D., Professor of Philosophy.

JOHN BERNARD EKELEY, Ph.D., Sc.D., Professor of Chemistry.

RUSSELL D. GEORGE, A.M., Professor of Geology.

THEODORE D. A. COCKERELL, Sc.D., Professor of Zoology.

GEORGE M. CHADWICK, Professor of Music.

JAMES F. WILLARD, Ph.D., Professor of History.

*OLIVER C. LESTER, Ph.D., Professor of Physics.

FRANK E. THOMPSON, A.B., Director of the College of Education; Professor of Education.

JUNIUS HENDERSON, A.B., Curator of Museum; Professor of Natural History.

JOHN S. McLUCAS, A.M., Professor of English.

GRACE VAN SWERINGEN BAUR, Ph.D., Professor of Germanic Languages.

MILO G. DERHAM, Ph.D., Director of the Summer Quarter; Professor of Latin.

†LAWRENCE W. COLE, Ph.D., Director of the College of Home Economics and Social Service; Professor of Psychology.

LORAN D. OSBORN, Ph.D., Director of the Extension Division; Professor of Sociology.

FREDERICK A. BUSHEE, Ph.D., Director of the College of Commerce; Professor of Economics and Sociology.

RALPH D. CRAWFORD, Ph.D., Professor of Mineralogy and Petrology.

* On leave of absence, autumn quarter, 1918-1919, for war service.

† On leave of absence for war service.

*HARRY A. CURTIS, B.S. (Ch.E.), Ph.D., Professor of Physical Chemistry.

FRANK L. CLAPP, Ph.D., Professor of School Administration; High School Visitor.

*ARNOLD J. LIEN, Ph.D., Professor of Political Science.

†JAMES A. MERRITT, Captain, U. S. A., Retired, Professor of Military Science and Tactics.

JAY W. WOODROW, Ph.D., Professor of Physics.

EDWIN W. PATTERSON, A.B., LL.B., Professor of Law.

‡S. ANTOINETTE BIGELOW, A.M., Dean of Women; Assistant Professor of English Literature.

§C. HENRY SMITH, Ph.B., Librarian; Assistant Professor of Bibliography.

*MAX M. ELLIS, Ph.D., Sc.D., Assistant Professor of Biology.

CARL C. ECKHARDT, Ph.D., Assistant Professor of History.

PHILIP G. WORCESTER, A.M., Assistant Professor of Geology.

WILLIAM F. BAUR, Ph.B., Assistant Professor of Germanic Languages.

PAUL M. DEAN, Ph.D., Assistant Professor of Chemistry.

GEORGE H. LIGHT, Ph.D., Assistant Professor of Mathematics.

THOMAS MAITLAND MARSHALL, Ph.D., Assistant Professor of History.

OSCAR A. RANDOLPH, Ph.D., Assistant Professor of Physics.

*JAMES N. ASHMORE, Director of Physical Education.

HELEN MASTERS BUNTING, Director of Physical Education for Women.

ELSIE S. PRATT, M.D., Medical Adviser to Women.

*DONALD MCFAYDEN, B.D., Ph.D., Instructor in History.

LORENA UNDERHILL, A.M., Instructor in Philosophy.

CLARIBEL KENDALL, A.M., Instructor in Mathematics.

*FRANCIS WOLLE, A.M., Instructor in English Literature.

*ERSKINE R. MYER, A.B., Instructor in English.

MAUD E. CRAIG, A.M., Instructor in Latin.

IRENE P. MCKEEHAN, A.M., Acting Dean of Women; Instructor in English.

*JAMES H. COWLES, A.B., Instructor in Life Insurance.

GLADYS C. CURTIS, A.M., Instructor in Education.

ALICE DOWNING HUNTER, A.M., Instructor in English.

* On leave of absence for war service.

† Resigned November, 1918.

‡ On leave of absence, 1918-1919.

§ On leave of absence from the Library to act as Quartermaster for the S. A. T. C., autumn quarter, 1918-1919.

- OLIN INGRAHAM, A.M., Instructor in Economics.
ARTHUR CHAPMAN, Litt.M., Instructor in Journalism.
*ESBON Y. TITUS, Ph.D., Instructor in Chemistry.
JOHN W. RENNELL, Instructor in Art.
BESSIE R. GREEN, A.M., Instructor in Biology.
SUSAN BLAKEY, A.B., B.S., Instructor in Home Economics.
JOHN D. COOKE, A.M., Instructor in English Literature.
BRYANT SMITH, A.B., LL.B., Instructor in Debating.
MARY V. McFARLAND, A.B., Instructor in Psychology.
RUSSELL N. LOOMIS, B.S. (Phar.), Instructor in Chemistry.
HORACE B. VAN VALKENBURGH, M.S., Instructor in Chemistry.
BENJAMIN D. CORNELL, A.M., Instructor in Chemistry.
EVA M. BAUM, A.B., Instructor in Chemistry.
WANDA I. FRAIKEN, A.M., Instructor in English.
CLARA HISCOCK BRACE, A.B., Instructor in Education.
HENRY M. SAYRE, Instructor in Accounting.
MAY SNYDER, A.B., Instructor in Romance Languages.
YOLANDA S. ALLEN, Instructor in Physical Education for Women.
CHARLOTTE F. ATWOOD, A.B., Instructor in Psychology and Assistant
in Romance Languages.
FLORENCE M. FARRINGTON, A.M., Instructor in Romance Languages.
MARY GARVIN, A.B., Instructor in Romance Languages.
GLADYS H. MATHEW, A.B., Instructor in English Literature.
ELIZA G. WILKINS, Ph.D., Instructor in Greek.
WILLIAM WARREN HOWE, A.B., Instructor in Chemistry.
JOE MILLS, Athletic Coach.
CLEOPHILE B. DEAN, Ph.D., Assistant in English Literature.
SYDNEY INGRAHAM, Assistant in Romance Languages.
†MAUDE E. ROWLAND, A.B., Assistant in Romance Languages.
*EDWIN D. HULL, M.S., Assistant in Biology.
‡RALPH HUBBARD, A.B., Assistant in Museum and in Biology.
§WINIFRED WHITE, A.B., Assistant in Museum and in Biology.
LEROY A. MACCOLL, Assistant in Physics.
NEWTON J. RICE, A.B., Assistant in Education.
*HAROLD P. MUNCK, A.B., Assistant in Economics.
|| FLOYD N. HOUSE, A.B., Assistant in Economics.

* On leave of absence for war service.

† Resigned March 1, 1919.

‡ Resigned December 1, 1918.

§ Appointed December 1, 1918.

|| Appointed April 14, 1919.

EQUIPMENT

LABORATORIES

THE PHYSICAL LABORATORY—The Department of Physics occupies the entire first floor, two hundred feet by sixty feet, of the Hale Science Building, with a large modern lecture room on the second floor. The laboratories are large and well supplied with gas, water, direct and alternating current, and the ordinary apparatus for students' use. There are rooms for advanced and research work equipped with special apparatus particularly in light and electricity. A well equipped shop and a department library also add greatly to the efficiency of the department.

CHEMICAL LABORATORY—The basement of the Chemistry Building contains a laboratory for organic and physiological chemistry, a laboratory for food analysis, a laboratory for sanitary water analysis, and the main stock and acid room. On the first floor are the laboratories for general inorganic chemistry and for qualitative analysis, a private laboratory, a laboratory for quantitative analysis, a balance room, a combustion room, and the stock distributing room. The second floor contains the main lecture room seating two hundred and fifty students, the lecture desk being supplied with water, gas, suction pumps, draught, and electric current; on this floor also are a room for the storage of lecture apparatus, a small lecture room seating eighty students, the chemical library, the professor's study and private laboratory, a laboratory for technical and gas analysis, and a laboratory for physical chemistry. Each desk in the various laboratories is equipped with gas, water, and sink, and, in the organic laboratory, with suction pumps. The ventilation is accomplished by the direct-indirect system, assisted by hoods and three horsepower electric motors and rotary fans. The laboratories for physical and advanced analytical chemistry are equipped with the proper apparatus for thorough experimental work in these subjects. The chemical library, to which students in the laboratories have access at any time, besides reference books on chemical subjects, contains bound files of the chief chemical journals of the world.

BIOLOGICAL LABORATORIES—The Biological Laboratories, located in the Hale Science Building, provide accommodations for work in general biology, zoology, and botany. The equipment is adequate for large undergraduate classes and for a limited number of advanced students. Students have ready access to the museum, herbarium, and department library. A greenhouse for experimental work will be erected during the summer of 1919. The summer mountain laboratory, maintained at Tolland, Colorado (altitude 8,889 feet), is chiefly for work in plant and animal ecology.

GEOLOGICAL, MINERALOGICAL, AND GEOGRAPHICAL LABORATORIES—The west wing of the new fire-proof science building now houses the departments of Geology, Mineralogy, and Geography.

In order to meet the increasing demand for instruction in geography and physiography, the department has been equipped with the most approved geographical and meteorological apparatus, including most of the instruments used in the U. S. Weather Bureau.

The Department of Geology has good working collections of mineral and rock specimens.

The laboratories are equipped with apparatus for chemical and optical mineralogy and petrology. The equipment for geologic surveying and mapping is practically complete.

The library of the department consists of about 3,000 volumes. It receives all United States and State Geological Survey reports and several important journals and magazines, and contains the recent text and reference books on geology, mineralogy, petrology, geography, and meteorology.

THE PSYCHOLOGICAL LABORATORY—The Psychological Laboratory occupies four rooms on the third floor of the Liberal Arts Building. It is well equipped for instruction and training in physiological and experimental psychology. The equipment includes the apparatus necessary for general training courses in psychology and psychological methods, chronographs and recording appliances of various kinds, microscopic and lantern slides of brain sections, models, charts, a complete set of anthropometric instruments, etc. Instruments are provided for typical experiments in psychophysics, sensation, perception, association, reaction and movement. Constant additions are being made to the equipment.

MUSEUM AND CABINETS

THE ZOOLOGICAL COLLECTIONS include vertebrate skeletons and skulls, mounted mammals and study skins, mounted birds and study skins, eggs and nests, fishes, reptiles, amphibians, crustaceans, insects, echinoderms, corals, sponges, and mollusks. Special importance attaches to the large collection of land, fresh-water, and marine shells, particularly rich in Rocky Mountain and Pacific Coast material; to fresh-water fishes from various parts of the world, including a large series from Colorado; to a good series of western reptiles and amphibians; and to a collection of Colorado butterflies.

THE BOTANICAL COLLECTION consists of a large series of mounted specimens, including seed plants, lichens, fungi and algæ, a display case of tropical seeds and fruits, a representative series of tropical woods and a collection of economic woods of the United States.

THE GUGGENHEIM BIOLOGICAL COLLECTION, purchased with funds placed at the disposal of the Board of Regents by Simon Guggenheim, consists of a fine series of the nests and eggs of birds taken by Mr. Dennis Gale at various altitudes in Colorado, with the accompanying field notes; also of a valuable collection of mounted birds and mammals, chiefly from Colorado and adjacent states.

THE MINERALOGICAL AND GEOLOGICAL COLLECTION consists of a large series of typical rocks, minerals, Colorado ores, microscopic sections of rocks, ores and minerals, wooden models of crystals, etc. They include both display and study specimens.

THE GUGGENHEIM MINERAL COLLECTION, the gift of Simon Guggenheim, consists of over 1,000 carefully selected type mineral specimens, which will be kept together for reference. It includes a large number of rare minerals not common in university cabinets, and is an extremely valuable addition to the equipment of the Department of Geology.

THE ETHNOLOGICAL COLLECTIONS consist chiefly of material illustrating the ancient culture of the southwestern United States, particularly the pottery, with many stone implements from Ohio and elsewhere, and ethnological material from the Philippines. These collections are increasing very rapidly. At present there are eleven cases of display material, besides many large objects not in cabinets.

THE PHOTOGRAPH AND LANTERN SLIDE CABINETS of the Biology and Geology departments and Museum contain several thousand negatives, prints and lantern slides illustrating various biological and geological phenomena.

THE PALEONTOLOGICAL COLLECTIONS include great quantities of Colorado marine invertebrates, very large numbers of Tertiary insects and plants from the Lake Beds of Florissant, Colorado, Cretaceous plants from various parts of the State and from Kansas, Paleozoic plants from the coal measures of the eastern states, many thousands of Tertiary and Pleistocene marine invertebrates from the Atlantic and Pacific coasts, a representative collection of Paleozoic invertebrates from the eastern states and Mississippi Valley, many invertebrate fossils from Europe, Panama, and Mexico, and a few important fossil vertebrates, mostly from Colorado.

THE MUSEUM is temporarily located in the Hale Science Building, and contains the paleontological, biological, and ethnological cabinets and part of the mineralogical collections. A large portion of the material hereinbefore described is considered a part of the Museum, though some of the most valuable study collections belong to the Biology and Geology departments, and all of the material in the Museum is intended for the use of the various teaching departments, of the general public, and of specialists working upon lines represented in the collections. More than forty display cases contain suitable material on exhibition, the balance being in drawer cabinets, where it may be examined by students and others interested. Large quantities of duplicates are being collected for class use, research, and exchange purposes. The Museum is at present the depository of the paleontological collections of the Colorado Geological Survey. Several loan collections are also in the cabinets.

ART COLLECTIONS

THE PHILLIPS ART COLLECTION is named from the donors, Mr. and Mrs. Ivers Phillips. It is contained in rooms on the second floor of the east wing of the Macky Auditorium. The masters of painting are represented by Braun autotypes; the works in architecture and sculpture, by large photographic reproductions, casts and several hundred glass transparencies.

THE FARNSWORTH COLLECTION OF COINS was given to the University by Dr. Wilson A. Farnsworth, of Cæsarea, Cappadocia. It consists of some three hundred and fifty Greek, Roman, Byzantine, mediæval, and modern coins. The collection is on exhibition on the third floor of the Arts Building.

COURSES OF STUDY

INTRODUCTORY

In connection with the requirements for graduation the following general tendencies may be noted. An attempt has been made to map out an intelligent and reasonable group system which shall leave adequate freedom for individual needs and abilities, and, at the same time, prevent undesirable scattering of the student's energies. Provision is made for a combination of certain fundamental subjects and free electives with special work that shall be more scholarly and more finally valuable both for cultural attainments and scientific efficiency.

Moreover, the plan adapts itself readily to the needs of students who are looking forward to further work in professional and technical schools. Thus, within the College of Liberal Arts itself provision is made for a College of Commerce with various subdivisions and for a College of Education. By combining work in the College of Liberal Arts with work in the technical schools the student may attain the degree of A.B., and either the degree of B.S. in the College of Engineering, or the degree of LL.B. in the School of Law, in six years, or the degree of M.D. in the School of Medicine, in seven years. In summary, then, we have a group system so arranged that the first two years in the College of Liberal Arts provide alike a foundation for more advanced work along University lines and a sound preparation for courses in technical and professional schools. This latter phase of the plan is in accordance with the growing conviction that the college course must do its part in the genuine preparation of students for a vocation, as well as offer every opportunity for the acquiring of a liberal education in the most enlightened sense of the word.

For the purposes of the present group system the various subjects are arranged as follows:

- I. DIVISION OF LETTERS: 6 groups.
- II. DIVISION OF SCIENCE: 7 groups.
- III. DIVISION OF PHILOSOPHY: 3 groups.
- IV. DIVISION OF HISTORY AND ECONOMICS: 3 groups.

With the same general purpose in view, but carried out in logical detail, the three following colleges have been established.

V. DIVISION OF COMMERCE, organized as the College of Commerce: 4 groups as follows: 1. Banking; 2. Manufacturing; 3. Journalism; 4. Trade, Transportation, Consular Service.

VI. DIVISION OF EDUCATION, organized as the College of Education; a professional group, and groups corresponding to those of the College of Liberal Arts.

VII. DIVISION OF HOME ECONOMICS AND SOCIAL SERVICE organized as the College of Home Economics and Social Service.

Here may also be noted the arrangement for obtaining two degrees in six and seven years by crediting courses in the professional schools as a substitute for the groups and electives of the last two years—an extension of the group system. See pages 56, 112.

VIII. ENGINEERING SUBJECTS: equivalent of two years.

IX. LAW SUBJECTS: equivalent of one year.

X. MEDICAL SUBJECTS: equivalent of one year.

REQUIREMENTS FOR ADMISSION

See page 27.

REQUIREMENTS FOR GRADUATION

To attain the degree of Bachelor of Arts students must complete one hundred and eighty-six hours, according to the schedule printed below:

Attention is called to the following points:

1. Students must take seventy-five hours in some scheduled group, including at least eighteen hours in the two minors with not less than six hours in either minor.

2. Students in the freshman and sophomore years shall take eighteen hours of two subjects of the three groups, Classics, Mathematics, and Science, not less than six hours to be taken in either of the two subjects chosen.

3. All students shall be given a special test in English during the sophomore year, to determine whether additional work in formal English shall be required for graduation.

4. In beginning language courses no credit is given for less than a full year's work.

NOTE—The various branches taught in the College of Liberal Arts are offered in courses of study. A *five-hour course*, as here used, means *five* exercises a week throughout a quarter; a course in which the class meets the instructor *once* a week is a *one-hour course*. Three *five-hour courses* successfully pursued for one quar-

ter would entitle the student to *fifteen* hours' credit; for one year, to *forty-five* hours' credit and so on. Students regularly take fifteen or sixteen hours per week.

On a day appointed before the beginning of each quarter all students are required to record their election of studies for that quarter. Credit will be granted for such studies only as have been approved by the Committee on Courses. No student will be permitted to change his course, or drop any study, except by vote of the Committee on Courses.

SCHEDULE

FRESHMAN YEAR

1. ENGLISH LANGUAGE	9 hours*
2. †CLASSICS, MATHEMATICS OR SCIENCE.....	9 hours
3. HISTORY OR ECONOMICS	9 hours
4. FREE ELECTIVES	15-18 hours
PHYSICAL EDUCATION	3 hours

SOPHOMORE YEAR

45-48 hours

5. †CLASSICS, MATHEMATICS OR SCIENCE.....	9 hours
6. PSYCHOLOGY OR PHILOSOPHY.....	9 hours
7. GROUP ELECTIVES (Major or Minor).....	15 hours
8. FREE ELECTIVES	9-12 hours
PHYSICAL EDUCATION	3 hours

JUNIOR YEAR

45-48 hours

10. GROUP ELECTIVES (Major or Minor).....	30-25 hours
11. FREE ELECTIVES	15-20 hours

SENIOR YEAR

45 hours

12. GROUP ELECTIVES (Major or Minor).....	30-25 hours
13. FREE ELECTIVES	15-20 hours

45 hours

* A written examination in English will be given to each student in the sophomore year, and those found deficient will be required to take additional courses in formal English.

† Students in the freshman and sophomore years shall take eighteen hours of two subjects of the three groups, Classics, Mathematics, and Science, not less than six hours to be taken in either of the two subjects chosen.

GROUPS

I. DIVISION OF LETTERS

GROUP (a) <i>Major</i> , Latin;	<i>Minors</i> , { Greek or French, European History.
GROUP (b) <i>Major</i> , Greek;	<i>Minors</i> , { Latin, English Literature or Philosophy.
GROUP (c) <i>Major</i> , German;	<i>Minors</i> , { History, Latin or French.
GROUP (d) <i>Major</i> , { Romance Languages;	<i>Minors</i> , { Latin, German or History.
GROUP (e) <i>Major</i> , { Literature, Comparative and English;	<i>Minors</i> , { Two of the following: History, English Language, *Classics.
GROUP (f) <i>Major</i> , { English Language;	<i>Minors</i> , { English Literature, English History.

II. DIVISION OF SCIENCES

GROUP (g) <i>Major</i> , Mathematics;	<i>Minors</i> ,	{ Physics, Astronomy.
GROUP (h) <i>Major</i> , Chemistry;	<i>Minors</i> ,	{ Physics, Mathematics.
GROUP (i) <i>Major</i> , Physics;	<i>Minors</i> ,	{ Mathematics, Chemistry.
GROUP (j) <i>Major</i> , Botany;	<i>Minors</i> ,	{ Zoology, Chemistry or Geology.
GROUP (k) <i>Major</i> , Zoology;	<i>Minors</i> ,	{ Botany, Chemistry.
GROUP (l) <i>Major</i> , Geology;	<i>Minors</i> ,	{ Chemistry, Mineralogy.
GROUP (m) <i>Major</i> , Mineralogy;	<i>Minors</i> ,	{ Geology, Chemistry.

* The courses presented may be either in English or in the ancient tongue.

III. DIVISION OF PHILOSOPHY

GROUP (n) <i>Major</i> , Philosophy;	<i>Minors</i> , { Psychology, Biology.
GROUP (o) <i>Major</i> , Psychology;	<i>Minors</i> , { Philosophy, Biology.
GROUP (p) <i>Major</i> , Education;	<i>Minors</i> , { Psychology, Biology.

IV. DIVISION OF HISTORY AND ECONOMICS

GROUP (q) <i>Major</i> , History;	<i>Minor</i> , Economics.
GROUP (r) <i>Major</i> , Economics;	<i>Minors</i> , { History, Sociology.
GROUP (s) <i>Major</i> , Sociology;	<i>Minors</i> , { Biology, Psychology.

ORDER OF DESCRIPTION OF COURSES

The various courses offered in the College of Liberal Arts are described in the following order:

Art.	Library Science and Practice.
Biology.	Literature, Comparative and
Chemistry.	English.
Economics and Sociology.	Mathematics.
Education.	Music.
English Language.	Philosophy, Logic, and Ethics.
Geology, Mineralogy, and	Physical Education.
Geography.	Physics.
Germanic Languages and	Psychology.
Literatures.	Romance Languages—
Greek.	French, Spanish, Italian.
History.	Electives in the Professional
Home Economics.	Schools.
Latin.	

DESCRIPTION OF COURSES*

ART

1. COLOR AND DESIGN. Three quarters. 3 h.

Conventionalization of natural forms; applied design; the full use of color and all techniques will be developed.

Students in this course will be required to attend a series of lectures on color, historic and modern ornament, lettering, etc., of one hour a week throughout the year in addition to the other studies.

Prerequisite: Freehand drawing. Open on consultation.

2. ADVANCED COLOR AND DESIGN. Three quarters. 2 h.

The use of natural forms and the human figure, leading to ornamental illustrating for publications, mural decoration, etc.

Students in this course will be required to attend a series of lectures on color, historic and modern ornament, lettering, etc., of one hour a week throughout the year in addition to the other studies.

Prerequisite: Freehand drawing. Open on consultation.

3. THE HOUSE, ITS FURNISHING AND DECORATION. Three quarters. 2 h.

Exercises in the handling of color; color drawings of furnishings and interiors; drawings of floor plans, elevations and details; study of the periods in architecture and in interiors and furnishings; study of modern interior decoration and furniture; the use of household paints and varnishes; dyeing and dye stuffs.

Students in this course will be required to attend a series of lectures on color, historic and modern ornament, etc., of one hour a week throughout the year in addition to the other studies.

4. MODERN PAINTING. One quarter. 2 h.

A detailed discussion of the purposes of modern paintings and of modern schools and the paintings of the future.

* Courses for graduates only are listed and described under Graduate School. See page 196.

The lecture on color is open to students in this course, but it is not required and no credit will be given.

See, also, under other departments:

Freehand Drawing.

Greek Art.

Masterpieces of Art.

Aesthetics.

BIOLOGY

I. GENERAL BIOLOGY

1. PRINCIPLES OF BIOLOGY.* Autumn and winter quarters. 3 h.

For those who wish to know something of current biological theories and discoveries, but do not necessarily expect to specialize in the department. Open to freshmen only if they have had some biological work in high school.

Lectures on heredity, evolution, the elements of classification, distribution of organisms in time (paleontology) and space (biogeography), lives of eminent naturalists, etc. The first quarter is devoted mainly to general and theoretical considerations, the second to the groups of animals and special topics.

2. SANITARY SCIENCE.* Autumn quarter. Division I, Tu. Th., 8:00; Division II, Tu. Th. 2:00. 2 h.

Structure and life activities of bacteria, yeasts and protozoa, especially as related to disease production; fermentation, and the rotation of the elements in nature. Problems of infection and immunity; antitoxins, vaccines, etc. Control of disease in school, home, and city. Recitations and lectures.

3. HYGIENE AND PHYSIOLOGY.* Winter quarter. Division I, Tu. Th. 8:00; Div. II, Tu. Th. 1:00. 2 h.

The human body viewed as a mechanism; the operation of that mechanism as a whole and the correlation of its several parts; individual and family health.

* These courses count as required science if taken with some laboratory course in the department.

4. HISTORY OF BIOLOGY.* Autumn quarter. 2 h.

The progress of zoology and botany from the earliest times to the present; history of biological investigation; development of established theories; biology and human progress.

Prerequisite: 9 hours of zoology or botany. Not open to freshmen.

5. GENETICS.* Spring quarter. 3 h.

Recent progress in the study of heredity in plants and animals; human heredity; eugenics.

Prerequisite: Principles of Biology or its equivalent. Not open to freshmen.

6. PLANKTONOLOGY.

Biology and economic relations of the microscopic plants and animals found in ponds, streams, and potable waters.

7. MICROBIOLOGY. 4 h.

Structure and cultural features of molds, yeasts, bacteria and protozoa with relation to the household, to agriculture and to industries; fermentation; decay. Chiefly a laboratory course.

Prerequisites: Sanitary Science and Plant Morphology.

8. PUBLIC HEALTH PROBLEMS. Spring quarter. 3 h.

Prerequisite: Sanitary Science.

9. TEACHERS' COURSE IN BIOLOGY. 2 h.

The planning and teaching of courses in botany, elementary agriculture and nature study in high schools and grades. Open on consultation.

10. NUTRITIONAL PHYSIOLOGY.* Spring quarter. 2 h.

Prerequisite: a college course in either hygiene or physiology.

11. GENERAL BIOLOGY. Three quarters.

Students desiring a "General Biology" course may elect Biology 1, Botany 1 and 2, Zoology 1.

For courses for graduates only, see page 197.

NOTE—The more fundamental courses are offered every year; others are given when there is sufficient demand.

* These courses count as required science if taken with some laboratory course in the department.

II. BOTANY

1. COLLEGE BOTANY. Autumn quarter. M. W. F. Div. I, 8:00-10:00; Div. II, 1:00-3:00. 3 h.

A brief introduction to the structure and activities of plants.

This course is repeated in the summer quarter.

2. ECONOMIC BOTANY. Winter quarter. M. W. F. Div. I, 10:00-12:00; Div. II, 1:00-3:00. 3 h.

History and origin of cultivated plants. Botany of the world's food supply. Grains and other foods; microscopy of flours, meals, breads, starches, spices. Textiles. Raw materials of commerce.

3. PLANT MORPHOLOGY. Spring quarter. M. W. F. 1:00-3:00. 3 h.

Survey of the plant kingdom from alga to seed plant, closing with a study of the spring flora.

Prerequisite: 3 hours of botany.

4. ADVANCED ECONOMIC BOTANY. Spring quarter. 3 h.

5. PLANT TAXONOMY. Three quarters. M. W. F. 2:00-4:00. 3 h.
(With additional quiz hour once a week.)

Classification of spermatophytes. Representative plant families in Colorado.

Prerequisite: 9 hours of botany.

6. PLANT PHYSIOLOGY. Autumn and winter quarters. 3 h.

Prerequisite: 9 hours of botany; also inorganic chemistry.

7. PLANT ECOLOGY. Spring quarter. 3 h.

Structure and behavior of plants in relation to factors of the environment, as climate, water, light, soil, etc. Plant associations, consociations, societies. Successions, especially as exhibited in Colorado. Quadrat studies. Use of field instruments.

Prerequisite: 9 hours of botany.

8. FOREST BOTANY. Autumn and winter quarters. 2 h.

Prerequisite: College Botany.

9. PLANT ANATOMY. Spring quarter. 3 h.

Tissues and tissue systems of spermatophytes. Vascular anatomy as related to phylogeny. Botanical microtechnique.

10. MYCOLOGY. 3 h.

For courses for graduates only, see page 197.

NOTE—The more fundamental courses are offered every year; others are given when there is sufficient demand.

III. ZOOLOGY

1. COLLEGE ZOOLOGY. Three quarters. M. W. F. Div. I, 10:00-12:00;
Div. II, 2:00-4:00.

An introduction to the entire field of zoology. Autumn quarter: Protozoa to Crustacea. Winter quarter: Insecta to Chordata. Spring quarter: variation, geographical distribution, elements of comparative morphology, histology, embryology; paleontology.

2. VERTEBRATE ANATOMY. Spring quarter. M. W. F. 2:00-4:00,
with additional quiz hour once a week. 3 h.

Designed primarily for pre-medical students but open to all who have completed 6 hours of College Zoology.

3. PHYSIOLOGY. Autumn and winter quarters. Tu. 10:00, and
Th. 10:00-12:00. 2 h.

Recitations, demonstrations and laboratory work.

Prerequisites: Inorganic Chemistry, also College Zoology or Elements of Zoology.

4. ECONOMIC ZOOLOGY. Spring quarter. Tu. 10:00, and Th. 10:00-
12:00. 2 h.

Animals and animal products useful to man; foods, textiles, leather, fats, drugs, etc. Insect-destroying birds. Origin and improvement of domestic animals.

5. COMPARATIVE MORPHOLOGY (INVERTEBRATES). Autumn quarter.
M. W. F. 8:00-10:00. 3 h.

An advanced course for students who have completed at least 6 hours of zoology.

6. COMPARATIVE MORPHOLOGY (VERTEBRATES). Winter quarter.
M. W. F. 8:00-10:00. 3 h.

A continuation of the preceding.

7. ANIMAL ECOLOGY. Spring quarter. M. W. F. 8:00-10:00. 3 h.
A study of animals as related to environment. Animal communities. Areal zoology.

8. CYTOLOGY. Three quarters. M. W. F. 10:00-12:00, with additional quiz hour. Not given in 1919-1920.

9. GENERAL ENTOMOLOGY. Three quarters. M. W. F. 3 h.

The elements of entomology including the classification and life histories of insects, with discussion of the biological principles illustrated by insects.

Prerequisite: A course in zoology or biology.

10. ELEMENTS OF ZOOLOGY. Spring quarter. M. W. F. 9-00-11:00.
3 h.

A brief survey of the animal kingdom covering the more essential parts of the first two quarters of College Zoology.

11. ORNITHOLOGY. Summer quarter.

A general account of the birds of the world with special reference to economic forms and Colorado species. Lectures, with supplementary museum and laboratory work and some field work.

12. FIELD ZOOLOGY. Summer quarter.

At the Mountain Laboratory, Tolland, Colorado.

13. ICHTHYOLOGY. For advanced students. Hour to be arranged.
2 to 5 h. each quarter.

For courses for graduate students, see page 198.

NOTE—The more fundamental courses are offered every year; others are given when there is sufficient demand.

CHEMISTRY

1. GENERAL INORGANIC CHEMISTRY.* Three quarters. M. W. F. 10:00. 3 h. Those electing Course 1 must also elect Course 2. A course of lectures dealing with the laws and theories of chemistry, together with a study of the elements and their most important compounds.

2. GENERAL INORGANIC CHEMISTRY.* Three quarters. Tu. Th. 8:00 or 1:00. 2 h. This is a laboratory course designed to accompany Course 1.

3. ADVANCED INORGANIC CHEMISTRY. Three quarters. Lectures. Tu. Th. 10:00. 2 h.

A systematic study of the elements based on the periodic classification. Open to seniors and graduates.

4. ELEMENTARY QUALITATIVE ANALYSIS. Three quarters. Lectures. M. 11; Laboratory, Tu. Th. 9:00 or 1:00. 3 h.

A course in the separation and identification of the more common bases and acids. The lectures deal with the chemistry of the analytical reactions, special emphasis being given to the application of mass-action, ion-product, etc. The course must be continued through at least two quarters.

Prerequisite: Inorganic Chemistry.

5. ADVANCED QUALITATIVE ANALYSIS. Autumn and winter quarters. Lectures, M. 10:00; Laboratory, M. W. F. 9:00 or 1:00. 3 h.

The course consists of the study of the rare elements, their separation and identification.

Prerequisite: Course 4.

6. QUANTITATIVE ANALYSIS. Three quarters. Lectures, Th. 11:00; Laboratory, M. W. F. 9:00 or 1:00. 4 h.

Elementary gravimetric and volumetric analysis, chemical calculations, etc. This course must be continued throughout at least two quarters.

Prerequisite: Course 4, or may be taken with Course 4.

* All students entering the Department of Chemistry and not presenting university credits in general inorganic chemistry must take courses 1 and 2.

7. ORE ANALYSIS. Second quarter. Lectures, W. 9:00; Laboratory, M. W. F. 9:00 or 1:00. 4 h.

A course in the analysis of ores, slags, etc. by the technical methods in use in mills and smelters.

Prerequisite: Mineralogy and Fire-assaying.

8. ANALYSIS OF IRON AND STEEL. Spring quarter. 3 h.

A practical course in the laboratory methods in use in the leading steel works.

Prerequisite: Course 6.

9. GAS ANALYSIS. Spring quarter. 3 h.

A course in the methods for determining the constituents of gas mixtures, especially as applied to illuminating gas, mine and furnace gases.

Prerequisite: Course 6.

10. ELEMENTARY ORGANIC ANALYSIS. Winter and spring quarters. 3 h.

A course in the separation and identification of pure organic compounds and mixtures, including ultimate organic analysis by combustion, etc.

Prerequisite: Courses 4 and 13.

11. SANITARY WATER ANALYSIS. Any quarter. 8:00 or 1:00. 3 h.

A course in the chemical and bacteriological examination of water with regard to its use for drinking purposes.

Prerequisite: Course 4.

12. MINERAL WATER ANALYSIS. Any quarter. 8:00 or 1:00. 3 h.

A course in the analytical methods used in the determination of the mineral and gaseous constituents of natural waters.

Prerequisite: Course 4.

13. ORGANIC CHEMISTRY. Three quarters. M. W. F. 9:00. 3 h. Lectures.

A study of the methods of preparation and the properties of the more important organic compounds. Special stress is laid upon the theories underlying the subject and the proofs of the constitution of most of the substances studied.

14. **LABORATORY PRACTICE IN ORGANIC PREPARATIONS.** Winter and spring quarters. M. W. F. 1:00. 3 h.

A laboratory course in the preparation of typical aliphatic and aromatic compounds.

Prerequisite: Course 13, autumn quarter.

15. **PHYSICAL CHEMISTRY.** Three quarters. M. W. F. 11:00. 3 h.

A lecture course presenting the conceptions of the modern physico-chemical theories concerning the states of aggregation of matter, solutions, thermo-chemistry, equilibria, chemical kinetics, electro-chemistry, and actino-chemistry.

16. **PHYSICAL CHEMISTRY.** Three quarters. M. F. 1:00. 2 h.

A laboratory course supplementing Course 15, consisting of the determinations of densities, molecular weights, thermo-chemical and optical constants, conductivity of solutions, electromotive force, transference numbers, viscosity, surface tension, electrochemical equivalents, transition points, etc.

17. **ELECTROCHEMICAL ANALYSIS.** Winter quarter. 1:00. 2 h.

Laboratory practice in the determination and separation of the common metals by electrolytic methods.

Prerequisite: Course 4.

18. **FOOD ANALYSIS.** Autumn and winter quarters. 8:00 or 1:00. 3 h.

Lectures and laboratory.

A detailed course giving practice in the official and standard methods for the analysis of foods and the detection of adulterants.

Prerequisite: Courses 4 and 13.

19. **DRUG ASSAYING: PHARMACOPOEIAL TESTING.** Autumn and winter quarters. Any three periods. 8:00 or 1:00. 3 h.

A laboratory course giving practice in the official and standard methods for the identification, determination of purity, detection of adulterants and assaying of official drugs.

Prerequisite: Courses 5 and 12.

20. DRUG ASSAYING: ORGANIC ANALYSIS. Autumn and winter quarters. Three periods. 8:00 or 1:00. 3 h.

A laboratory course in the qualitative and quantitative analysis of pharmaceutical and commercial organic products, such as alcohol, ethers, esters, glycerine, soaps, formalin, organic acids, etc.

Prerequisite: Courses 4 and 13.

21. DRUG ASSAYING: ALKALOIDAL ASSAYING. Spring quarter. Any two periods. 8:00 or 1:00. 2 h.

Lecture and laboratory course.

A course consisting of all the most important alkaloidal assays and the separation and detection of the alkaloids.

Prerequisite: Courses 4 and 13.

22. ADVANCED FOOD ANALYSIS. Any quarter. Any three periods. 8:00 or 1:00. 3 h.

An advanced laboratory course in the official and standard methods of food analysis.

Prerequisite: Course 18.

23. HISTORY OF CHEMISTRY. Winter quarter. Th. 11:00. 1 h.

Prerequisite: Courses 1, 2, 4, 5.

24. ELEMENTARY BIOCHEMISTRY (PHYSIOLOGICAL CHEMISTRY).
Spring quarter. Lectures, M. W. F. 9:00; Laboratory,
M. W. F., 10:00-12:00. 5 h.

This course is designed primarily for students taking the combined College and Hospital course for the B.S. degree or the course in Home Economics.

Prerequisite: Course 13.

25. BIOCHEMISTRY. (PHYSIOLOGICAL CHEMISTRY).^{*} Autumn quarter. Daily (except Saturday.) 8:00-12:00. 10 h.

Lectures, recitations, and laboratory exercises on the chemistry of carbohydrates, fats, and proteins; of salivary, gastric, pancreatic and intestinal digestion; of bile, putrefaction products, feces; of epithelial, connective, muscular and

^{*} Courses 24 and 25 are given in the Department of Biochemistry, School of Medicine.

nervous tissues; of blood, milk and urine. Considerable time is devoted to practical qualitative and quantitative methods of analysis of urine, milk, stomach contents, and blood, and to practical work in metabolism.

Open only to advanced students of chemistry.

Prerequisite: Course 13, and either 14 or 24.

26. INDUSTRIAL CHEMISTRY. Spring quarter. Time to be arranged.
4 h.

A lecture course on the principal chemical industries.

ECONOMICS, SOCIOLOGY, AND POLITICAL SCIENCE

I. ECONOMICS

1. INDUSTRIAL HISTORY OF MODERN EUROPE.* Autumn quarter.
M. W. F. 2:00. 3 h.

Recitations, lectures, reports.

Traces the industrial and social development of the principal nations of Europe from the French Revolution to the present time.

2. ECONOMIC HISTORY OF THE UNITED STATES.* Winter and spring quarters. M. W. F. 2:00. 3 h.

Recitations, readings, lectures.

Traces the growth of industry, agriculture, commerce, transportation, population, and labor from the simple, isolated, agricultural communities of the colonies, to the complex industrial and commercial society of today.

3. ECONOMIC AND COMMERCIAL GEOGRAPHY. Autumn quarter.
M. W. F. 11:00. 3 h.

A study of the influence of the geographic environment on the economic life and development of peoples.

4. HISTORY OF COMMERCE. Spring quarter. M. W. F. 3:00. 3 h.

A study of the development of the world's commerce with special attention to modern commercial organization.

* Juniors and seniors receive only partial credit.

5. **ECONOMIC PROBLEMS OF RECONSTRUCTION.** Winter and spring quarters. M. W. F. 11:00. 3 h.

A study is made of the problems in finance, business and labor which the war has brought into prominence. The economic principles which apply are explained. Suggested reforms are discussed.

Courses 1 to 5 are introductory and are open to freshmen.

6. **PRINCIPLES OF ECONOMICS.** Autumn and winter quarters. M. W. F. 9:00. 3 h. Not open to freshmen.

The purpose of this course is to teach fundamental principles; to open the field of economics in the way most helpful to further and more detailed study of special problems, and to give those not intending to specialize in the subject an outline of the general principles of economics.

7. **PRINCIPLES AND PROBLEMS OF ECONOMICS.** Three quarters. M. W. F. 10:00. 3 h. Not open to freshmen.

The purpose of this course is similar to Course 3, but it involves a more extended discussion of fundamental principles and a study of a larger number of specific problems.

8. **STATISTICS.** Spring quarter. 1:00. 3 h.

This course deals with elementary principles together with their applications, special emphasis being given to vital statistics.

9. **LABOR PROBLEMS.** Autumn quarter. Tu. Th. 2:00. 2 h. Not open to freshmen.

Recitations, reports, lectures.

A study of labor organizations, employers' associations, their respective methods of bargaining, the relation of government to both.

10. **SOCIAL LEGISLATION.** Spring quarter. Tu. Th. 2:00. 2 h. Not open to freshmen.

Recitations, reports, lectures.

A study of legislation to remedy conditions of destitution and dependence.

11. MONEY AND BANKING. Three quarters. Tu. Th. 8:00. 2 h.

Lectures, readings, discussion.

The history and theory of money, credit, and banking; special attention given to present-day problems of money and banking in the United States.

Prerequisite: Course 6 or 7.

12. TRANSPORTATION. Winter quarter. M. W. F. 1:00. 3 h.

Recitations, reports, lectures.

A study of the development of rail and water transportation in the United States; special emphasis laid on the condition of railway transportation at the present time. Rates and rate-making, finance, traffic, operation, and legislation, are studied in turn.

Prerequisite: Course 6 or 7.

13. TAXATION. Autumn quarter. M. W. F. 1:00. 3 h.

Lectures, discussions, reports.

A general study of the theory of public finance and a more detailed study of the revenue systems in the United States.

Prerequisite: Course 6 or 7.

14. CORPORATIONS. Autumn quarter. M. W. F. 2:00. 3 h.

Lectures, discussions, reports.

A study of the nature and organization of corporations. A comparison of the corporate form with other forms of business enterprise. The methods of forming corporations; types of securities; methods of marketing stocks and bonds; financing an enterprise; distribution of earnings; reorganization; problems of regulation and control.

Prerequisite: Course 6 or 7.

15. LIFE INSURANCE. Winter and spring quarters. Tu. Th. 3:00.
2 h.

16. MODERN ACCOUNTING. Winter and spring quarters. M. W. F.
3:00. 3 h.

17. **TRUSTS.** Spring quarter. Tu. Th. 1:00. 3 h.
Lectures, discussions, reports.
A study of the economics of integration and combination. The trust movement—its causes, characteristics, and monopoly tendencies. Competition and regulation; the Federal Trade Commission; proposed solutions of the trust problem.
Prerequisite: Course 6 or 7.
18. **BUSINESS ORGANIZATION AND SCIENTIFIC MANAGEMENT.** Winter quarter. M. W. F. 2:00. 3 h.
A study of the forms, methods, and principles of business organization and management; production, administration, and sales; records and accounts; systems of wage payments; principles of efficiency and scientific management.
Prerequisite: Course 6 or 7.
19. **MATHEMATICAL THEORY OF INVESTMENTS.** Spring quarter. M. W. F. 10:00. 3 h.
See Department of Mathematics.
20. **PRINCIPLES OF ADVERTISING AND SALESMANSHIP.** Spring quarter. M. W. F. 2:00. 3 h.
See also Department of Psychology.
For courses for graduates only, see page 211.

II. SOCIOLOGY

1. **PRINCIPLES OF SOCIOLOGY.** Three quarters. Tu. Th. 10:00. 2 h. For juniors and seniors.
Lectures, readings, discussions.
In this course an attempt is made to formulate the fundamental laws of association, with special reference to their relation to social progress. Such topics as the influence of the physical environment, natural selection, warfare, division of labor, sex and sexual selection, heredity, imitation, social oppositions, art, science, and religion will be discussed with reference to their effects on social progress.
2. **PROBLEMS IN SOCIOLOGY.** Three quarters. Tu. Th. 9:00. 2 h.
Lectures, assigned readings, discussions.
This course takes up the study of our various social institutions, placing special emphasis upon the family, its origin, function and problems. The course includes a study of immigration, race problems, poverty, crime, and kindred subjects.

3. **SOCIALISM.** Winter and spring quarters. Tu. Th. 9:00. 2 h.

Proposals for the reorganization of society on a socialistic basis will be studied historically and critically. Writings of the early French and English socialists will be reviewed, but the major part of the course will be devoted to a study of the modern movement.

4. **MODERN ENGLISH REFORMERS.** Autumn and winter quarters. M. W. F. 1:00. 3 h.

The lives of English Reformers, with discussion on the principles and methods of reform. Wilberforce, Robert Owen, Cobden, Bright, J. S. Mill, Kingsley, Maurice, Florence Nightingale, Shaftsbury, Octavia Hill, Ruskin, Dickens, Huxley, William Morris, A. R. Wallace, etc.

5. **ADVANCED THEORY OF SOCIOLOGY.** Spring quarter. Tu. Th. 9:00. 2 h. For advanced students only.

A critical study of the theories of the leading sociologists beginning with Auguste Comte.

6. **RURAL SOCIOLOGY.** Autumn quarter. Tu. Th. 9:00. 2 h.

A study of the social problems of rural community life.

For courses for graduates only, see page 212.

III. POLITICAL SCIENCE

1. **NATIONAL GOVERNMENT OF THE UNITED STATES.** Autumn and winter quarters. M. W. F. 8:00. 3 h. Open to freshmen.

An elementary course in American Government, intended as a preparation for advanced work in political science, for teaching in secondary schools, and for good citizenship. Deals with the organization and work of the national government in all of its aspects.

2. **STATE AND LOCAL GOVERNMENT.** Spring quarter. M. W. F. 8:00. 3 h. Open to freshmen.

Deals with problems in state and local government, development of state institutions, new departures in legislation and administration, the initiative, the referendum, the recall, the budget, working of our courts, state police development, civil service and the short ballot movement; special emphasis on Colorado.

3. COMPARATIVE EUROPEAN GOVERNMENT. Autumn and winter quarters. M. W. F. 1:00. 3 h.

A study of the organization and workings of the governments of representative European states, especially Great Britain, France, Germany, and Switzerland; party systems and cabinet government in these countries.

Prerequisite: Course 1, Course 2, or equivalent.

4. MUNICIPAL GOVERNMENT. Spring quarter. M. W. F. 1:00. 3 h.

A study of city charters, methods of city organization and administration, relation of the city to the state, home rule movement, commission government, the city manager type, short ballot and other reforms, comparisons with European cities.

Prerequisite: Course 2, or equivalent.

5. POLITICAL PARTIES AND PARTY PROBLEMS. Autumn quarter. Tu. Th. 1:00. 2 h.

This course deals with the functions, history, and organization of political parties, party machinery, and such current party problems as direct primaries, nomination by petition, non-partisan elections, preferential voting, corrupt practices acts, and methods of party finance.

Prerequisite: Course 1, Course 2, or equivalent.

6. CONSULAR AND DIPLOMATIC SERVICE. Autumn quarter. Tu. Th. 1:00. 2 h. Alternates with Course 5.

Outline of the growth of international relations, the mode of conducting foreign affairs, methods of making, interpreting and terminating treaties and compacts, organization, duties and immunities of consular and diplomatic agents, diplomatic relations with Latin America and the Far East.

Prerequisite: Course 1, or equivalent.

7. INTERNATIONAL LAW AND RELATIONS. Winter and spring quarters. Tu. Th. 1:00. 2 h. Alternates with Course 8.

A study of the nature, sources and sanction of international law; status of nations; rules of peace, neutrality and war; doctrine and rules of neutrality; international rights of

persons and property in time of peace and war; the Hague Conferences; newer problems, tendencies, and proposals; international unions, associations and cooperation.

Prerequisite: Courses 1 and 3, or equivalent.

8. MUNICIPAL FUNCTIONS AND PROBLEMS. Winter quarter. Tu. Th. 1:00. 2 h.

In this course will be considered some of the prominent problems of the modern city. Attention will be given to such questions as municipal ownership and regulation of public utilities, franchises, accounting and budget making, markets, city planning, municipal lodging and housing, recreation facilities, dust prevention, unemployment, the garden city movement, the social evil, public health, and other problems.

Prerequisite: Course 4 or equivalent.

9. PRACTICAL CITIZENSHIP. Spring quarter. Th. 11:00. 1 h.

A study of the place of the citizen in a democracy; acquisition and loss of citizenship; privileges and duties of citizens.

10. GOVERNMENTS AND IDEALS OF THE STATES AT WAR. Spring quarter. Th. 11:00. 1 h.

A survey of the political theories and ideals underlying the governments of the states at war and a critical consideration of the various governments.

EDUCATION

For further suggestions regarding the functions or purposes of the courses in this department and the order in which they should be taken see College of Education, page 118.

1. GENERAL PSYCHOLOGY. (PSYCHOLOGY 1.) Two sections. Autumn and winter quarters. M. W. F. 1:00, 2:00, with an additional hour to be arranged for recitations and conferences. 3 h.
2. EDUCATIONAL PSYCHOLOGY.. (PSYCHOLOGY 6.) Spring quarter. M. W. F. 1:00. 3 h.
3. PRINCIPLES OF EDUCATION. Autumn and winter quarters. M. W. F. 8:00. 3 and 2 h.

An elementary discussion of the nature, scope, and aims of Education; an examination of those facts, theories, and hypoth-

eses of biology, physiology, anthropology, psychology, sociology, and economics which would seem to have significance for educational theory; a synthesis of what is found to be pertinent into a working creed for the educator.

Prerequisite: Courses 1 and 2 or their equivalent.

4. PUBLIC EDUCATION; ITS ORGANIZATION AND MANAGEMENT. Winter and spring quarters. Tu. Th. 2:00. 2 h.

The relationships between public education and government; school law; the internal organization of a school system; school hygiene; school discipline. The topics are treated in an elementary way.

5. PRINCIPLES AND PRACTICE OF TEACHING. Three quarters. Tu. Th. 8:00 and other hours to be arranged. 2-6 h.

The application of principles to practice; the method and methods of the teacher in the elementary and secondary schools; comparative study of general and special methods; improvements in methods; classroom problems and their solution; the learning process and its direction; how we think and learn to think; how to study; how to teach others to study; essentials in the learning and teaching of the elementary and secondary school subjects.

Practice teaching is done in the University Training School (an ungraded school managed by the University), and in the Boulder High School. The student teaches under real school-room conditions except that classes are smaller, beginning teachers are helped more, and supervision emphasizes the learning rather than the teaching process.

Prerequisite: Courses 1, 2, 3, and 4, or their equivalents, senior standing, and the instructor's permission.

6. THE PUBLIC SCHOOL PROGRAM OF STUDIES. Autumn quarter. M. W. F. 2:00. 3 h.

The general subject of educational purposes and values is studied as a guide in the interpretation and making of programs of studies. Different programs of studies are examined as illustrative of fundamental principles and the members of the class prepare outlines of work in subjects of their choice.

Prerequisite: Courses 1, 2, and 3, or their equivalents.

7. HISTORY AND PHILOSOPHY OF EDUCATION. Three quarters. M. W. F. 10:00. 3 h. Open to all.

8. SECONDARY EDUCATION. Autumn and winter quarters. Tu. Th. 1:00. 2 h.

Designed to give a broad view of the purposes and methods of secondary education; includes a brief historical survey; a study of existing systems, their organization and administration; the secondary school curriculum; the social life of high-school pupils; and a critical study of proposed plans for reorganization of the secondary school.

9. PRINCIPLES OF PRE-SCHOOL EDUCATION. Spring quarter. M. W. F. 8:00. 3 h.

For those who wish a general yet fairly complete view of the problems of the guidance of children, particularly during the earlier years. The nature of mental soundness; biological and anthropological considerations of mental and moral hygiene; the relation of environment to instruction; the various adaptations required by the environments; the fundamental human occupations; the levels of attainment and satisfaction.

Prerequisite: Courses 1, 2, and 3, or their equivalent.

10. ANTHROPOLOGY. Autumn quarter. M.W.F. 9:00. 3 h.

An introductory study of the natural history of man; a survey of his physical evolution; his agreements with and divergencies from allied animals; theories of time and place of origin; the conditions of his existence and development; his relation to the rest of nature.

11. ETHNOGRAPHY. Winter quarter. M. W. F. 9:00. 3 h.

The main divisions of mankind and their chief physical characteristics; a comparative study of the chief tribes and races in their respective habitats; conditions which bring about differentiation; the migrations of tribes and races; the composition of new stocks; racial prospects.

12. ETHNOLOGY. Spring quarter. M. W. F. 9:00. 3 h.

The beginnings and transmission of culture; chief divisions of primitive culture; the cultural conditions as differen-

tiating peoples; the variety and range of human activities; the elementary thoughts of mankind—primary elements of culture and mental life; the origin, growth, and present condition of the social, religious, industrial, political, and scientific occupations and institutions of various peoples; the identity of “the human” in the variety of peoples; culture grades and their causes.

13. **SOCIAL PSYCHOLOGY.** Autumn quarter. Tu. Th. 9:00. 2 h.

A study of personality as socially modified or determined; the effects of imitation; habit; habit and attention; social and personal crises; language; instincts, emotions, sentimentalisms, sentiments, and ideas; occupations and institutions.

Prerequisite: Courses 1 and 2, or their equivalent.

14. **EDUCATION AND SOCIETY.** Winter and spring quarters. Tu. Th. 9:00. 2 h.

A study of the interrelations of education and society; society's responsibilities to, and need of, the school; the school's duty to, and expectations of, society; educational institutions and forces other than the school; society an educational device.

Prerequisite: Courses 1, 2, and 3, or their equivalent.

15. **SCHOOL SUPERVISION.** Spring quarter. M. W. F. 2:00. 3 h.

A study of those phases of school work that require coordination and the cooperation of the entire teaching corps. The course is planned for both teachers and supervisors. Among the topics to be studied are: the methods of supervision; the graded system and its modifications; the training, selection, promotion, and professional growth of teachers; school finance; records and reports.

Prerequisite: Courses 1, 2, 3, and 4, or their equivalent.

16. **PRACTICUM IN EDUCATION.** Any one or more quarters. Hour to be arranged. Credit to be arranged.

The class will work on the seminar plan. The topic for 1919-1920 will be determined after the personnel of the class is known.

17. SEMINAR IN EDUCATION. Three quarters. W. 7:40 p. m. 2 to 6 h.

Subject-matter will vary from year to year; special examination and investigation of selected problems of importance in educational theory and practice; provision for independent investigations and for research in special problems.

Prerequisite: senior or graduate standing, and the instructor's permission.

ENGLISH LANGUAGE

1. FRESHMEN ENGLISH. Fourteen sections. Three quarters. M. W. F. 8:00, 9:00, 10:00, 11:00, 2:00, 3:00. 3 h. Required of all freshmen.

Textbook, daily themes, oral exercises.

2. ADVANCED COMPOSITION. Three sections. Three quarters. Tu. Th. 9:00, 10:00, 2:00. 2 h.

Textbook, themes.

3. SHORT STORY. Tu. 7:30. 2 h.

A course in writing short stories under criticism of the instructor and the class, to which only a limited number of apt students are admitted.

4. ARGUMENTATION AND DEBATE. Three quarters. M. W. F. 2:00. 3 h. Not open to freshmen.

At the end of the first semester the University debating squad is selected. Those forming this squad will be given two additional credits. No student shall receive more than a total of ten credits in debating.

5. PUBLIC SPEAKING. Three quarters. Tu. Th. 3:00, and afternoons to be arranged. 2 h.

No credit will be allowed unless the course is continued through three quarters.

A study of oratorical style, analysis and writing of orations, practical exercises.

6. JOURNALISM. Three quarters. Tu. Th. 7:30. 2 h.
Lectures, reports, practical work.
Prerequisite: Advanced Composition.
7. ADVANCED JOURNALISM. Three quarters. Tu. Th. 8:30. 2 h.
Lectures, reports, practical work.
Prerequisite: Journalism.
8. HISTORY OF THE ENGLISH LANGUAGE. M. W. F. 10:00. 3 h.
Lectures and recitations.
9. ANGLO-SAXON. M. W. F. 3 h.
Bright's Anglo-Saxon Reader.
10. ANGLO-SAXON. M. W. F. 3 h.
Beowulf.
11. MIDDLE ENGLISH. Tu. Th. 2 h.
Supplementary reading, lectures, reports.
12. CHAUCER. Tu. Th. 2 h.
Lectures, readings, reports. Skeat's Texts.
13. SHAKESPEARE. Three quarters. M. W. F. 11:00. 3 h.
The careful reading of two plays each quarter. Rolfe's Texts.
14. PRE-SHAKESPEAREAN DRAMA. Tu. Th. 2 h.
Lectures, readings, reports. Manly's Specimens of Pre-Shakespearean Drama.
15. INTERPRETATION OF ENGLISH POETRY. Tu. Th. 11:00. 2 h.
Lectures, readings, reports.
16. STUDY OF PROSE STYLE. Three quarters. Tu. Th. 9:00. 2 h.
Not open to freshmen.
Lectures, readings, reports.
17. ENGLISH FOR TEACHERS. M. W. F. 9:00. 3 h.
Lectures, reports, discussions.
For courses in Literature, Comparative and English, see page 96.

GEOLOGY, MINERALOGY, AND GEOGRAPHY

I. GEOLOGY

1. **PHYSIOGRAPHY.** Autumn quarter. Two sections. Lectures. M. W. F. 9:00 and 1:00. One three-hour field or laboratory period a week to be arranged. 4 h.

Occasional Saturday trips will be required.

This course covers essentially the work heretofore done during the first three months in general geology. It includes a study of the atmosphere, the waters of the earth, the geologic and geographic changes of the surface of the earth, and the development of the present relief features.

An introductory course open to all.

The course may be taken with Geology 2 and 3 to complete 12 hours science. It should be elected by all students, without previous college training in the subject, who expect to specialize in geology or geography.

2. **GENERAL GEOLOGY.** Winter and spring quarters. M. Tu. W. Th. 1:00. 4 h. Field or laboratory period second quarter, 1:00 to 3:00; third quarter, 1:00 to 4:00. Two Saturday trips will be taken.

The course will consist of a study of the principles of geology, with special reference to the geological history of North America.

Prerequisite: Geology 1 (Physiography).

3. **ENGINEERING GEOLOGY.** Autumn quarter. M. W. 11:00. One three-hour field or laboratory period to be arranged. 3 h. Second quarter, M. W. F. 11:00. One two-hour field or laboratory period to be arranged. 4 h.

This course will include a general discussion of the principles of geology and the relations of geology to engineering operations.

Open to upperclassmen who are not majoring in geology.

4. **ECONOMIC GEOLOGY.** Autumn and winter quarters. M. W. F. 10:00. Two hours to be arranged to suit the convenience of the students. 3 h.

A study of the mineral resources of the United States, including the origin and character of ore bodies, the ores of

iron, copper, lead, zinc, gold, silver, etc.; the extraction and uses of the metals; fuels, building materials, fertilizers, mineral waters, etc.

Prerequisites: Geology 1 and 2 or 3; Mineralogy 1 is strongly recommended.

5. **STRUCTURAL GEOLOGY.** Autumn quarter. M. W. 11:00. 2 h.

Prerequisite: Geology 1 and 2, and General Physics.

6. **OIL GEOLOGY.** Winter and spring quarters. M. W. 11:00. 2 h.

Prerequisite: Geology 5.

7. **GEOLOGIC SURVEYING.** Spring quarter. Daily. 5 h.

Given on alternate years.

This course is designed to train the student in all kinds of geologic field work. The methods used are those employed by the U. S. Geological Survey.

Prerequisite: Geology 5, and Mineralogy 1. Open only to students who have made good records in the prerequisite courses.

8. **ADVANCED GEOLOGY.** Winter and spring quarters. M. W. F. 2:00. 3 h.

Given on alternate years.

Prerequisite: Geology 1, 2, 5; and Mineralogy 1.

9. **GEOLOGY OF COLORADO.** Autumn quarter. M. W. F. 3 h.

Given on alternate years.

A study of the dynamic, structural, historical, and economic geology of Colorado.

This may be taken as a four-hour course.

Prerequisite: Geology 1 and 2, and Mineralogy 1.

10. **GEOLOGY. (A CULTURE COURSE.)** Spring quarter. M. W. 3:00. 2 h.

Open to juniors, seniors, and graduates.

A lecture and reading course for general culture rather than scientific training.

This course does not count toward the science requirement, nor will credit be given to students who have credit for Geology 1, 2.

11. PALEONTOLOGY. Three quarters. 3 h.

The course is open to advanced students in geology and biology, on consultation with the professor.

It will include lectures on the principles of paleontology, and the facts concerning the development of types which characterize the several periods of geologic time; laboratory work in the identification, classification and description of fossil animals and plants, and the discussion of their stratigraphic and biologic position and significance.

For courses for graduates only, see page 201.

II. MINERALOGY AND PETROLOGY**A. Courses for Undergraduates.****1. ECONOMIC MINERALOGY.** Three quarters. Tu. Th., one lecture and recitation period and two laboratory periods. 3 h.

The course includes the determination of minerals of economic importance by chemical and physical tests and the study of collections of economic minerals.

Prerequisite: a course in general chemistry.

2. CRYSTALLOGRAPHY. Autumn quarter. M. W. F. 3 h.

An elementary course that includes the study of crystals and crystal models.

B. Courses Open to Graduates and Undergraduates.**3. ADVANCED MINERALOGY.** Winter and spring quarters. One lecture and recitation period and two laboratory periods. 3 h.

A course in descriptive and determinative mineralogy. Minerals not studied in Course 1 are determined in the laboratory.

Prerequisite: Courses 1 and 2.

4. FIRE ASSAYING. Autumn quarter. M. W. F. 1:00; one recitation and lecture period and three laboratory periods. 4 h.

Prerequisite: Economic Mineralogy and Qualitative Analysis.

Ore Analysis, given in the Chemistry Department in the winter quarter, is recommended to students who take Fire Assaying.

5. **ADVANCED CRYSTALLOGRAPHY.** 3 to 6 hrs.

This course includes measurement of crystal angles with the reflecting goniometer, determination of indices and axial ratios, stereographic projection, and crystal drawing.

6. **OPTICAL MINERALOGY.** Autumn quarter. 3 h. Open on consultation.

7. **PETROGRAPHY.** Winter and spring quarters. 3 h. This course should be taken in the senior year by students who expect to do graduate work in geology.

Lectures, recitations, laboratory, work with petrographic microscope.

Prerequisite: Optical Mineralogy.

For courses for graduates only, see page 202.

III. GEOGRAPHY

1. **PHYSIOGRAPHY.** Autumn quarter. Two sections. Lectures M. W. F. 9:00 and 1:00. One three-hour field or laboratory period a week to be arranged. Occasional Saturday field trips will be required. 4 h.

This course includes a study of the atmosphere, the waters of the earth, the geologic and geographic changes of the surface of the earth, and the development of the present relief features.

It may be taken with Geography 2 and 3 or 2 and 4 to complete 12 hours in science.

2. **CLIMATOLOGY.** Winter quarter. M. W. F. 9:00; Laboratory, Th. 9:00-11:00. 4 h.

The course is based on a study of the atmosphere. It includes a thorough study of the climate of the world and a discussion of the relationships of climate to crops, industry and health.

Prerequisite: Geography 1, or Botany 1.

3. **GEOGRAPHY OF NORTH AMERICA.** Spring quarter. M. W. F. 9:00; Laboratory or field work, Th. 9:00-11:00. 4 h.

A study of the natural resources of the continent as factors in its cultural, historical and industrial development.

4. **ADVANCED PHYSIOGRAPHY.** Spring quarter. M. Tu. W. F. 8:00. 5 h. One three-hour field or laboratory period to be arranged.

The course is a continuation of Geography 1. It deals largely with the laboratory side of the work and the methods of teaching physical geography and physiography.

Not open to freshmen and sophomores. Given once in two or three years.

Prerequisite: Geography 1.

5. **GEOGRAPHY OF SOUTH AMERICA.** Winter quarter. M. W. Th. F. Hours to be arranged. 4 h.

A regional study of South America, with stress on the natural resources of the continent, and on the trade relations with the United States.

Not open to freshmen. Not given every year.

6. **GEOGRAPHY OF EUROPE.** To be arranged. 3 h.

A regional study of the continent. Particular attention is given to the subjects: the geography and strategy of the war, the natural and political boundaries, and the influence of the resources and environment on the development of the culture of the various European states.

Not open to freshmen. Not given every year.

GERMANIC LANGUAGES*

GERMAN

1. **ELEMENTARY COURSE.** Three quarters. 8:00, 1:00. 5 h.

Grammar, pronunciation, reading; practice in writing and speaking German.

2. **INTERMEDIATE COURSE.** Three quarters. M. W. F. 9:00. 3 h.

Reading of selected masterpieces of German literature, such as Lessing's *Minna von Barnhelm*, Schiller's *Jungfrau von Orleans*, Ludwig's *Zwischen Himmel und Erde*, Freytag's *Die Journalisten*.

Prerequisite: Course 1, or two years of high-school German. It is strongly recommended that Course 3 accompany Course 2.

* So far as practicable, the classes in this department are conducted in the German language.

3. COMPOSITION AND COLLOQUIAL PRACTICE. Throughout the year.
Tu. Th. 9:00. 2 h.

German themes and letters; drill in syntax and idiom.

Prerequisite: Course 1, or two years of high-school German. It is recommended that Course 3 be taken parallel with Course 2.

4. LESSING AS A DRAMATIST. Autumn quarter. 3 h.

Study of Nathan der Weise; discussions and reports.

Prerequisite: Course 2 or its equivalent.

5. VON SCHEFFEL'S EKKEHARD. One quarter. 3 h.

Reading and study of the entire novel.

Prerequisite: Course 2 or its equivalent.

6. FREYTAG'S BILDER AUS DER DEUTSCHEN VERGANGENHEIT. Winter quarter. 3 h.

Reading and study of selections.

Prerequisite: Course 4 or 5.

7. SCHILLER'S WALLENSTEIN AND DIE BRAUT VON MESSINA. Winter and spring quarters.

Readings from the other plays of Schiller; discussions and reports.

Prerequisite: Course 4 or 5.

8. GOETHE'S DRAMAS, EXCLUSIVE OF FAUST. One quarter. 3 h.

Readings, discussions, papers.

Prerequisite: Course 4 or 5.

9. THE GERMAN DRAMA OF THE NINETEENTH CENTURY. One quarter. 3 h. Open to advanced students who read German with facility.

Reading of representative plays and discussion of the problems which they present.

10. ADVANCED COMPOSITION. Three quarters. 2 h. Open to advanced students on consultation; recommended to prospective teachers of German.

Themes on various aspects of German life, with discussions in the German language.

11. GERMAN PRONUNCIATION. One quarter. 1 h.

Special drill on the German sounds; the reading of selected German poems.

Prerequisite: Courses 1-3.

12. GOETHE'S FAUST: PARTS I AND II. Two quarters. 3 h. Open to graduate students and seniors.

13. STUDIES IN THE HISTORY OF THE GERMAN NOVEL. Two quarters. 3 h. Open to seniors and juniors who read German with facility.

Reading and discussion of selected works.

14. THE GERMAN NOVELLE. Two quarters. 3 h. Open to seniors and juniors who read German with facility.

Reading and discussion of representative stories.

This course alternates with Course 13.

15. TEACHERS' COURSE. Two quarters. 2 h.

The phonetics and pronunciation of German; methods of teaching German to foreigners; examination of grammars and readers; systematic study of one of the texts usually read in high schools.

16. SCIENTIFIC GERMAN. Three quarters. 2 h.

Prerequisite: Course 1, or two years of high-school German.

17. THE HISTORY OF GERMAN LITERATURE FROM THE EARLIEST TIMES TO THE TIME OF KLOPSTOCK. Two quarters. 3 h. Open to advanced students who read German with facility.

Lectures, collateral reading, reports.

18. THE HISTORY OF GERMAN LITERATURE FROM THE TIME OF KLOPSTOCK TO THE PRESENT. One quarter. 3 h.

Lectures, collateral reading, papers.

19. GERMANIC HERO-SAGAS. Two quarters. 2 h. Open to advanced students.

Lectures, recitations, collateral reading.

20. GERMANIC MYTHOLOGY. Two quarters. 2 h. Open to advanced students.
Lectures, recitations, collateral reading.
Primitive Germanic religion, customs and ideals of life, in their relation to German literature.
21. GENERAL PHONETICS. Autumn quarter. 2 h.
An introduction to the subject, with a careful consideration of speech-sounds, and of the bearing of Phonetics upon the development of language.
22. POETICS. Two quarters. 2 h. Open to juniors and seniors.
The aim of poetry; forms of poetry; style; meter.
23. AN INTRODUCTION TO THE STUDY OF LANGUAGE. Two quarters. 2 h.
Aims and methods of linguistic study. Theories concerning the origin of language; grammatical gender; sound changes.
24. READING AND INTERPRETATION OF SELECTED GERMAN WORKS ON SOCIOLOGY AND PHILOSOPHY. Three quarters. 3 h. Open to graduate students and seniors.
Given in 1918-1919.
For courses for graduates only, see page 202.

SCANDINAVIAN

1. DANO-NORWEGIAN. Three quarters. 3 h. Open to all.
An introduction to the study of the Danish and Norwegian languages and literatures.
2. READING OF SELECTED MASTERPIECES OF NORWEGIAN LITERATURE, especially from the works of Ibsen and Björnson. Two quarters. 3 h.
Prerequisite: Course 1, or a reading knowledge of Norwegian.
3. SWEDISH. Three quarters. 3 h. Open to all.
An introduction to the Swedish language.
4. TEGNER'S FRITJOFS SAGA. Two quarters. 3 h.
Prerequisite: Course 3, or its equivalent.

GREEK

1. **ELEMENTARY COURSE.** Three quarters. 10:00. 5 h.
2. **HOMER, ILIAD; PLATO, APOLOGY AND CRITO.** Throughout the year.
10:00. 2 h.
Includes review of grammar.
3. **HOMER, ODYSSEY.** Winter quarter. 10:00. 2 h.
Prerequisite: equivalent of Courses 1 and 2.
4. **TRAGEDY.** Autumn quarter. 11:00. 3 h.
Aeschylus, Prometheus and Sophocles, Antigone.
5. **DEMOSTHENES.** Spring quarter. 11:00. 2 h.
Philippic and Olynthiac Orations.
6. **PLATO.** Winter quarter. 11:00. 3 h.
Interpretation of the Republic with lectures on Platonism.
7. **COMEDY.** Winter quarter. 11:00. 2 h.
Aristophanes, Clouds and Frogs.
8. **GREEK HISTORIANS.** Autumn quarter. 3:00. 3 h.
Selected books of Herodotus and Thucydides.
9. **PASTORAL POETRY.** Spring quarter. 3:00. 2 h.
Theocritus, Bion, and Moschus.
10. **LYRIC POETS.** Winter quarter. 3:00. 3 h.
Early lyric poets with introduction to Pindar and Bacchylides.
11. **PROSE COMPOSITION.** Spring quarter. 3:00. 2 h.
12. **GREEK POETRY IN ENGLISH.** Autumn quarter. 9:00. 2 h.
Knowledge of Greek not required.
Lectures and study of best translations.
13. **GREEK DRAMA IN ENGLISH.** Autumn quarter. 9:00. 3 h.
Continuation of Course 12.
14. **CLASSICAL MYTHOLOGY.** Winter quarter. 9:00. 3 h.
Lectures and textbook.
15. **GREEK ART.** Spring quarter. 2:00. 2 h.
Lectures and textbook.
16. **GREEK CIVILIZATION.** Autumn quarter. 10:00. 3 h.
Lectures and readings.
For courses for graduates only, see page 204.

HISTORY

Primarily for Freshmen.

1. EUROPEAN HISTORY, 376-1789.* Three quarters. 3 h.
2. ANCIENT HISTORY TO 800 A. D.* Three quarters. 3 h.

Not Open to Freshmen.

3. THE HISTORY AND LITERATURE OF THE HEBREWS AND JEWS TO 135 A. D. Three quarters. 2 h.
4. THE FRENCH REVOLUTION AND THE NAPOLEONIC ERA. One quarter. 3 h.

Prerequisite: Course 1.

5. EUROPE SINCE 1815.† Three quarters. M. W. F. 9:00. 3 h.
Prerequisite: Course 1.

6. ENGLISH HISTORY. Three quarters. M. W. F. 2:00. 3 h.
The political, economic and social history of England.
This course is required by the School of Law for entrance.

7. HISTORY OF THE UNITED STATES, 1783-1850. Three quarters. M. W. F. 11:00. 3 h. Any quarter's work may be taken separately. This course is prerequisite for courses 20 and 21.

8. THE UNITED STATES SINCE 1850. Three quarters. 2 h.
The Civil War, Reconstruction, and present day United States History.

For Juniors and Seniors.

9. POLITICAL HISTORY OF ATHENS. One quarter. 3 h.
10. THE POLITICAL THEORIES OF PLATO AND ARISTOTLE. One quarter. 2 h.
11. THE FALL OF THE ROMAN REPUBLIC. One quarter. 3 h.
12. THE ROMAN EMPIRE. One quarter. 3 h.
13. THE MEDIAEVAL CHURCH AND THE REFORMATION.† Three quarters. 3 h.

Open on consultation. This course will deal primarily with the institutional side of the mediæval and reformed churches.

* Juniors and seniors receive only partial credit.

† No credit given for less than three quarters.

14. ENGLISH MEDIÆVAL INSTITUTIONS.* Three quarters. M. W. F. 10:00. 3 h. Open on consultation.

A detailed study, based largely upon source material, of the manor, the gilds, feudalism, and the institutions of the church during the thirteenth and fourteenth centuries.

15. THE ITALIAN RENAISSANCE. Two quarters. 3 h.

Special emphasis will be placed upon the artistic and literary side of the Renaissance.

Prerequisite: Course 1.

16. INTERNATIONAL COOPERATION HISTORICALLY CONSIDERED. One quarter. 2-3 h.

A study of the conditions favoring and hindering international life. The actual international organizations and institutions before 1914. The growth of international arbitration. The peace movement and the league of nations idea.

17. ADVANCED MODERN EUROPEAN HISTORY. One quarter. 3 h.

A detailed study will be made of some limited phase of modern history, *e. g.*, the Near Eastern question or the history of France or Germany since 1870. The subject will be changed each year and the course may be elected more than once.

Prerequisite: Course 5.

18. A HISTORY OF RUSSIA. One quarter. 3 h.

19. THE WESTWARD MOVEMENT. Three quarters. 2 h.

A study of the Western expansion of the English colonies and the United States.

Prerequisite: Course 7.

20. COLONIZATION OF NORTH AMERICA. Three quarters. 3 h.

The course surveys the colonizing activities in the West Indies and North America of Spain, France, the Netherlands, Sweden, and England, and the international struggles of the eighteenth century and the American Revolution.

21. HISTORY OF AMERICAN DIPLOMACY. Three quarters. 2 h.

A survey of the foreign relations of the United States since 1776.

22. RESEARCH COURSE IN THE HISTORY OF THE WEST.* Three quarters. 2 h.

* No credit given for less than three quarters.

23. **METHODS OF TEACHING HISTORY.** One quarter. 2-3 h.
Required of all students who are preparing to teach history.
24. **HISTORIOGRAPHY.** One quarter. 3 h. Required of all juniors and seniors majoring in history.

HOME ECONOMICS*

1. **ELEMENTARY FOODS.**† Spring quarter. 3 h.

Nature and use of foods, their history, production, manufacture, composition, and economic value; principles underlying the preparation of typical foods; practice in fundamental cooking processes.

For students who have not had one unit of cookery in an accredited high school:

2. **SELECTION AND PREPARATION OF FOODS.**† Three quarters. 3 h.
Principles of selecting foods and methods of preparing them.

Nutritive and economic value of various food combinations.

3. **MEAL PLANNING AND SERVING.**† Autumn and winter quarters. 3 h.

A general survey of the principles of cookery and their application to a wide range of food materials. Meal planning and table service. (Not given 1919-1920.)

4. **EXPERIMENTAL COOKERY.**† 3 h.

Experimental work in various problems in the field of cookery. (Not given 1919-1920.)

5. **NUTRITION.**† Autumn and winter quarters. 4 h.

Principles of human nutrition. Application to needs of individuals and groups under varying conditions. Special diets in disease. Methods of computing dietaries.

6. **CATERING.** Three quarters. 3 h.

Computing cost; planning and serving of meals and refreshments for social functions.

* Credits listed in this department apply only on the B. S. degree.
† All students are required to wear white cotton or linen uniforms in cooking classes.

7. GARMENT MAKING. Autumn and winter quarters. 3 h.

Essentials of sewing applied to household mending, the making of undergarments, simple dresses, etc. Choice of materials, elementary drafting, pattern making.

Required of students who have not had one unit of sewing in an accredited high school.

8. DRESSMAKING. Three quarters. 3 h.

Continues the work of Course 7 with broader and more difficult applications. Study of materials; problem of home-made and commercial clothing; practical applications. Making of shirt waists and dresses of cotton, silk and woolen fabrics. (Not given 1919-1920.)

9. ADVANCED DRESSMAKING.

Designing and draping on the form. Advanced work in practical applications.

10. TEXTILES. Spring quarter. 3 h.

Study of the production and manufacture of textile materials. Identification of fabrics.

11. HOUSEHOLD MANAGEMENT. Three quarters. 3 h.

Organization of the household; the budget and its apportionment; application of principles of scientific management to the household.

12. CARE OF THE CHILD. Spring quarter. 3 h.

This course will give special emphasis to the food and hygiene of the young child.

Courses given in other departments, but particularly related to Home Economics:

ART AND DESIGN. Autumn and winter quarters. 3 h.

THE HOUSE; ITS FURNISHING AND DECORATION. Three quarters. 2 h.

BACTERIOLOGY. Autumn quarter. 4 h.

PHYSIOLOGY. Autumn and winter quarters. 2 h.

ECONOMIC BOTANY. Winter quarter. 3 h.

BIOCHEMISTRY. Spring quarter. 5 h.

For description of these courses refer to the several departments.

LATIN

1. **ELEMENTARY COURSE.** Three quarters. 10:00. 5 h.
First year Book: Grammar: Caesar's Gallic War.
2. **CICERO AND VIRGIL.** Three quarters. 1:00. 5 h. For students who enter with two units of Latin, or have taken Course 1.
Selected orations of Cicero; Latin writing, drill in forms and syntax. The Aeneid, Books I-VI; drill in reading the Latin hexameter, case and verb constructions, and poetic usages.
3. **CICERO, DE SENECA; SELECTIONS FROM LIVY; TERENCE, PHORMIO.** Three quarters. 8:00. 3 h.
Latin grammar, prose composition.
4. **OVID, SELECTIONS; HORACE ODES AND EPODES; TERENCE, PHORMIO.** Three quarters. 8:00. 2 h.
5. **LATIN PROSE.** Autumn quarter. 8:00. 2 h.
6. **TACITUS.** Spring quarter. 8:00. 2 h.
Tacitus, Agricola and Germania; the spread of Roman influence in the West; early civilization of Western Europe.
7. **LATIN PROSE AND SIGHT TRANSLATION.** Winter quarter. 9:00. 3 h.
8. **LATIN LITERATURE.** Three quarters. 2:00. 3 h.
The outlines of the literature with its historical setting. The course is based on Latin selections.
9. **ROMAN HISTORY.** Autumn quarter. 10:00. 3 h.
Lectures and reports on sources.
Outlines of Roman history; the history of Rome from its foundation to 476 A. D., based on Latin extracts.
10. **ROMAN SATIRE.** Spring quarter. 8:00. 3 h.
Horace, Juvenal, Persius; the origin and development of satire with a critical estimate of the historical value of the contents.
11. **TACITUS AND PLINY.** Winter quarter. 8:00. 2 h.
Tacitus, Histories, book I; Pliny, Letters, book X; introduction to the prose of the Silver Latinity; Rome and the provinces.

12. ROMAN COMEDY. Winter quarter. 1:00. 3 h.

Terence and Plautus, six plays; a comparative study of these authors, from the literary as well as the morphological side.

13. RHETORICAL TREATISES. Three quarters. 5 h.

Horace, *Ars Poetica*; Cicero, *De Oratore*, *Brutus*; Quintilian, book X; Tacitus, *Dialogus de Oratoribus*; principles of literary criticism; the debt of the above writers to Greek sources.

14. CATULLUS. Autumn quarter. 11:00. 2 h.

Latin lyrical poetry.

15. ROMAN PHILOSOPHY. Three quarters. 5 h.

Lucretius, *De Rerum Natura*; Cicero, *De Natura Deorum*, *De Finibus* and *Tusculanae*; Seneca, selections; the place of Roman philosophy in the history of philosophy; the part played by those writers individually.

16. ROMAN HISTORY. 63 B. C. to 37 A. D. Spring quarter. 3 h.

Sallust, *Cataline*; Cicero, *Letters* (Abbott's selections); Tacitus, *Annals*, books I-VI; Velleius Paterculus, book II.

17. TIBULLUS AND PROPERTIUS. Winter quarter. 2 h.

Selected odes; special studies in Latin lyrical poetry.

18. MARTIAL AND PLINY. 2 h.

Selected epigrams and letters; private life under the early Roman Empire.

19. LATIN LITERATURE IN ENGLISH. 3 h.

The course is based on standard translations and is intended for students not taking Latin.

20. LIVY. 2 h. For advanced students.

Book I as a basis for the consideration of the problems of early Roman history.

21. SUETONIUS. 2 h.

Selected lives; introduction to the history of the Empire.

22. TEACHERS' TRAINING COURSE. Winter quarter. 3 h. For advanced students.

Lectures, reviews of textbooks; practical work in teaching under supervision.

23. ADVANCED LATIN PROSE. 2 h.

Stylistic analysis of Latin authors; the writing of Latin prose; problems in syntax.

24. GREEK AND ROMAN ARCHÆOLOGY. 2 h.

An elementary course in architecture, sculpture, and painting.

25. MINOR LATIN POETS.

Selections from various poets writing later than 69 A. D.
For courses for graduates only, see page 204.

LIBRARY SCIENCE AND PRACTICE

1. LIBRARY SCIENCE AND PRACTICE. Three quarters. Th. 3:00, lectures; five hours each week, laboratory. 2 h.

Lectures by members of the library staff, and invited members of the profession. The course aims to give an adequate working knowledge of library usage. Visits to neighboring libraries, binderies, and publishing houses supplement lectures and laboratory instruction. No credit will be given unless the course is taken the three quarters.

LITERATURE, COMPARATIVE AND ENGLISH

1. ART FORM. Three quarters. 1 h. Open to all.

Lectures illustrated by lantern slides; recitations.

The sources, effects, and methods of composition in poetry illustrated by reference to architecture, sculpture and painting; the chief art works of every age.

2. THE BEST PROSE OF ALL AGES. Three quarters. 3 h. Open to all.

3. THE SHORT STORY. One Quarter. 3 h. Open to all.

Studies analytical and historical of masterpieces of short-story art by Poe, Hawthorne, Bret Harte, O'Brien, O. Henry, Björnson, de Maupassant, Stevenson, Kipling, and others.

4. PRESENT DAY POETS. 2 h. Open to all.

5. JOURNAL CLUB. 1 h. Open to all. The course may be repeated until three hours of credit are obtained.

Reports and informal discussions of current literature.

6. AMERICAN AUTHORS. Three quarters. 2 h. Open to freshmen and sophomores.

7. THE HISTORY OF ENGLISH LITERATURE. Three quarters. 5 h. Not open to freshmen. Recitations and lectures.

From Anglo-Saxon times to the twentieth century; the chief types of prose and poetry; the principles of literary analysis and criticism; wide reading in English authors. This is the foundation course for those electing literature as a major. An effort is made to secure good habits of reading and writing.

History of English Literature; readings in English Literature.

8. SHAKESPEARE. Three quarters. 5 h. Open to graduates and advanced undergraduates.

All the plays attributed to Shakespeare are read during the year; studies in the style, diction, and versification of the different periods; the establishment of the text; interpretation of great dramatic types—history, comedy, tragedy; wide reading and some original research.

9. THE GREAT DRAMA. Three quarters. 5 h. For graduates and advanced undergraduates.

The international aspects of the English drama; a reading course from the mystery plays to the twentieth century.

10. AMERICAN PLAYS. 2 h. Not open to freshmen.

11. THE ANALYSIS OF PLAY CONSTRUCTION. Three quarters. 2 h.

One lecture hour; one hour for conferences on writing plays.

12. WORLD DRAMA. Three quarters. 5 h. For graduates and advanced undergraduates.

The development of the drama from the earliest times to the present; primitive drama; the literary drama of China, Japan, and India; the ancient classical drama; Calderon, Corneille, Racine, Molière, Victor Hugo; Lessing, Schiller, Goethe; Ibsen; Tolstoy; Echegaray; Rostand, Maeterlinck; D'Annunzio; Hauptmann, Sudermann. This is a reading course, including one hundred and twenty-seven plays (in English).

13. LYRIC POETRY. Three quarters. 5 h. Open to graduates and advanced undergraduates.

An historical survey from the earliest Greek lyrics to the poets of the present day. Attention is directed to the comparative study of particular lyric forms.

14. THE GREAT EPICS. Three quarters. 5 h. For graduates and advanced undergraduates.

The Iliad, the Odyssey, and the Æneid; the Divine Comedy; the great epics of all ages (in English).

15. MASTERPIECES OF PROSE FICTION FROM THE EARLIEST TIMES. Three quarters. 5 h. Open to graduates and advanced undergraduates.

Typical masterpieces from the Greek romances to the twentieth century novel.

16. MILTON. 2 h. For graduates and advanced undergraduates.

17. SHELLEY. 2 h. For advanced students.

18. TENNYSON. Three quarters. 2 h. For advanced students.

19. BROWNING. 2 h. For advanced students.

The Globe edition of Tennyson; the Cambridge edition of Browning. The Seminary Library contains many volumes of valuable Tennysonianana presented by members of the class of 1896, and publications of the Browning Society.

20. THE LATER NINETEENTH CENTURY POETS. 2 h. Open to seniors and juniors.

Extensive readings in Clough, Arnold, Rossetti, Morris, Stevenson, Swinburne, Meredith, Patmore, and Wilde.

21. LITERARY FORMS OF TODAY. Autumn quarter. 3 h. Open to graduates and advanced undergraduates. Required for a major in literature.

Personal and public letters, précis-writing, sketches, essays, critiques, theses, memoirs, speeches, lectures, orations, stories, verse, dramatization.

Studies in the chief uses of formal language required of college graduates by modern life. Much reading and writing.

Courses 19 and 22 in the Department of Germanic Languages count toward a major in literature.

Freshman composition does not count as a minor for English Literature major.

For courses in English Language, see page 79.

For courses for graduates only, see page 206.

MATHEMATICS

1. COLLEGE ALGEBRA AND TRIGONOMETRY. Autumn and winter quarters. 3 h.
Presupposes 1 unit of high-school algebra.
2. TRIGONOMETRY. Spring quarter. 3 h.
This course is intended for students not enrolled in the College of Liberal Arts.
3. ANALYTICAL GEOMETRY. Spring quarter. 3 h.
Prerequisite: Course 1 or its equivalent.
4. DIFFERENTIAL AND INTEGRAL CALCULUS. Three quarters. 3 h.
Prerequisite: Courses 1 and 3.
5. DIFFERENTIAL EQUATIONS. Autumn and winter quarters. 3 h.
Prerequisite: Courses 1, 3, and 4.
6. LIE THEORY OF DIFFERENTIAL EQUATIONS. Spring quarter. 3 h.
Prerequisite: Course 5.
7. APPLIED GEOMETRY. Spring quarter. 3 h.
Prerequisite: 1 unit of high-school geometry.
8. THEORY OF EQUATIONS.* Spring quarter. 3 h.
Prerequisite: Courses 1, 3, and 4. Not given in 1919-20.
9. ANALYTIC SOLID GEOMETRY. Autumn quarter. 3 h.
Prerequisite: Course 3.
10. MODERN GEOMETRY. Winter quarter.
Prerequisite: Courses 3 and 8.
11. TEACHING OF MATHEMATICS.* Autumn and winter quarters. 3 h.
Not given in 1919-1920.
12. HISTORY OF MATHEMATICS.* Autumn and winter quarters. 3 h.

* Given in alternate years.

13. MATHEMATICAL THEORY OF INVESTMENT. Spring quarter. 3 h.
14. SERIES. Spring quarter. 3 h.
15. COURSES IN COMPLEX FUNCTIONS, PROJECTIVE GEOMETRY, AND TRANSCENDENTAL FUNCTIONS will be given when requested by five or more students.

For courses for graduates only, see page 207.

MUSIC

1. HARMONY. Three quarters. M. W. F. 10:00. 3 h.
Textbook: Bussler.
2. COURSE 1 CONTINUED. Three quarters. Tu. Th. 11:00. 2 h.
Textbook: Bussler.
Prerequisite: Course 1.
3. COUNTERPOINT. Three quarters. Tu. Th. 9:00. 2 h.
Prerequisite: Courses 1 and 2.
4. CANON AND FUGUE. Three quarters. 2 h.
Prerequisite: Courses 1, 2, and 3.
5. COMPOSITION AND ORCHESTRATION. Three quarters. 2 h.
Prerequisite: Courses 1, 2, and 3.
6. HISTORY OF MUSIC. Three quarters. M. 3:00. 1 h. Open to all.
Lectures.
7. AESTHETICS AND PHILOSOPHY OF MUSIC. Winter and spring quarters. W. 7:30. 1 h. Open only to graduate students and seniors.
Seminar.

PHILOSOPHY

1. HISTORY OF PHILOSOPHY. Three quarters. M. W. F. 11:00. 3 h.
Open to all.
2. INTRODUCTION TO PHILOSOPHY. Three quarters. M. W. F. 9:00.
3 h. Open to all.

3. HISTORY AND PHILOSOPHY OF EDUCATION.* Three quarters. M. W. F. 10:00. 3 h. Open to all.
4. ETHICS. Autumn and winter quarters. Tu. Th. 10:00. 2 h. Open to all.
5. LOGIC. Spring quarter. Tu. Th. 10:00. 2 h. Open to all.
6. ELEMENTARY AESTHETICS.* Winter and spring quarters. Tu. Th. 9:00. 2 h. Open to all.
7. ADVANCED AESTHETICS.* Autumn quarter. Tu. Th. 9:00. 2 h. Prerequisite: Elementary Aesthetics.
8. METAPHYSICS. To be arranged. For advanced students.
9. HISTORY OF SCIENCE.* Autumn quarter. Tu. 7:30 to 9:00. 2 h. Open to all. Not given 1919-1920.
10. PHILOSOPHY OF HISTORY.* With special reference to the present world outlook. Winter quarter. M. W. F. 3:00. 2 h. Open to all.

PHYSICAL EDUCATION

Two years' work in Physical Education is required of students in the College of Liberal Arts. Beyond this no academic credit is given for any of the courses in Physical Training except the Teachers' Course, and the Playground Course.

COURSES FOR MEN

1. ELEMENTARY GYMNASTICS. Three quarters. M. W. F. 1 h. Open to all.
Calisthenics; light apparatus work; marching and drills; indoor and outdoor games.
2. ADVANCED GYMNASTICS. Three quarters. M. W. F. 1 h. Open to all.

Heavy apparatus work, advanced calisthenics, gymnastic games, contests of skill and strength, boxing and wrestling.

* None of these courses count as requirements in Philosophy until basic courses 1, 2, 4 and 5 have been taken.

3. **TEACHERS' COURSE.** Three quarters. 1 h.

A study of the major branches of sports: football, basketball, baseball, track and field athletics, each in season. Lectures on the game, offense, defense, the rules, the several positions, daily programs of practice, methods of coaching. The class instruction is paralleled by practical work.

4. **ATHLETICS.** Throughout the year. Elective for students who are physically competent.

Football, basketball, soccer, tennis, baseball, track and field work.

COURSES FOR WOMEN

1. **FRESHMAN COURSE.*** Three quarters. Three hours a week. 1 h.
Required of freshmen.

a. Archery, tennis, basketball, baseball, golf. Out of doors. September to November.

b. Elementary Swedish gymnastics—marching, floor work, apparatus work; folk dancing; æsthetic dancing. In gymnasium. November to Spring Recess.

c. Archery, tennis, baseball, golf, track. Out of doors. Spring Recess to end of third quarter.

In a and c one sport only is required. Students may choose from the group offered.

2. **CORRECTIVE COURSE.** Three quarters. Three hours a week. 1 h.
Open to all on consultation.

a. Same as (a) in Course 1.

b. Corrective Swedish Gymnastics—marching, floor work, corrective apparatus work; folk dancing; æsthetic dancing. In gymnasium. November to Spring Recess.

c. Same as (c) in Course 1.

3. **RESTRICTED COURSE.** Three quarters. Three hours a week. 1 h.
Open to all on consultation.

a. Archery. Out of doors. September to November.

b. Restricted Swedish gymnastics—marching and floor work; folk and æsthetic dancing. In the gymnasium. November to Spring Recess.

* The restricted and corrective courses may be substituted for this course in cases where conditions of health or posture make such substitutions advisable. This is possible only by permission of the director of the department.

c. Archery. Out of doors. Spring Recess to last of May.

This course is for students whose condition of health is such that they may not take either of the above courses.

4. SOPHOMORE COURSE. Three quarters. Two hours a week. 1 h.

Required of sophomores.

Continuation of fall and spring sports, and Advanced Swedish Gymnastics.

5. ADVANCED COURSE. Three quarters. Open to upper classmen.

Elective.

a. Athletics. (1) Archery, tennis, baseball, golf. Out of doors. September to November. Two hours a week. (2) Basketball. In the gymnasium. November to Spring Recess. Two hours a week. (3) Archery, tennis, baseball, track, golf. Out of doors. Spring recess to end of third quarter.

b. Gymnastics. Advanced Swedish Gymnastics—marching, floor work, apparatus work. In the gymnasium. November to Spring Recess. Two hours a week.

c. Dancing. Advanced æsthetic and interpretative dancing. In the gymnasium. November to Spring Recess. Two hours a week.

Prerequisite: Course 1 or its equivalent.

6. PLAYGROUND COURSE. Three quarters. Four hours a week

with additional hours in first aid. 3 h. Elective.

Open to both men and women. No credit will be given unless the course is continued through three quarters.

a. Theory. (1) Lectures, assigned readings, papers, book reviews. Nature and function of play; economic and sociologic needs for playgrounds; development of playground movement in America; organization of playground movements; practical conduct of playgrounds—equipment, instruction, supervision, activities, aims. (2) First Aid. Ten lectures of one and a half hours each. Required of all playground students. Recitations, assigned readings, practice in bandaging. Course given by a physician.

b. Practical work. (1) Practice teaching: practice in teaching dances, organized games, team games. (2) Practice in folk dances for all ages; relay races; organized games; team games—volley-ball, captain-ball, basketball (women's), indoor baseball, track.

PHYSICS

1. **GENERAL PHYSICS.*** Lectures, two hours, W. F. 11:00; recitations, two hours. 4 h.

a. Mechanics and Sound; autumn quarter. b. Heat and Light; winter quarter. c. Electricity and Magnetism; spring quarter.

Prerequisite: An elementary knowledge of plane trigonometry.

2. **EXPERIMENTAL PHYSICS.** One three-hour period per week. 1 h.
Quantitative laboratory work in the subjects indicated in Course 1a, b, c.

Prerequisite: An elementary knowledge of plane trigonometry.

3. **ANALYTICAL MECHANICS—STATICS.** Spring quarter. M. W. F. 11:00. 3 h. Taken regularly in the sophomore year.

A study of the conditions of equilibrium of particles and rigid bodies; centers of mass; moments of inertia.

Prerequisite: Course 1, and calculus; open however to those taking the integral calculus.

4. **ANALYTICAL MECHANICS—DYNAMICS.** Autumn and winter quarters. 3 h. M. W. F. 8:00. Taken regularly in the sophomore year.

A study of the motion of particles and rigid bodies. Emphasis is laid upon the fundamental physical principles of the subject and an attempt is made to give the student a certain facility in translating physical conceptions into mathematical symbols and mathematical formulae into physical ideas.

Prerequisite: Course 1 and calculus.

* Course 1 is an elementary but thorough presentation of the fundamental facts, principles, and applications of modern physics. Although the subject matter is divided for convenience into quarters, students are expected to continue the study throughout the year.

The lectures are fully illustrated by apparatus and by experiments. The recitations are based upon both the lectures and a textbook which is studied systematically in parallel with the lectures.

It is strongly recommended that course 2 be taken in parallel with course 1. When not so taken course 1 or its equivalent must precede.

Course 1 (and in many cases also course 2), or its equivalent, are prerequisite for all those that follow. They are taken regularly in the sophomore year but may be taken by freshmen with the requisite preparation. They should be taken as soon as possible by those whose major subject is physics, mathematics, or chemistry.

5. **TEACHERS' TRAINING COURSE IN PHYSICS.** Spring quarter. 3 h.

A course designed primarily for those who expect to teach physics in secondary schools. Such topics as the proper arrangement of a secondary-school course, laboratory equipment and instruction, aims, ways and means of teaching the various subjects, things which do and which do not need emphasis, will be considered in lectures, discussions, and reports. Considerable outside reading will be required.

Prerequisite: Courses 1 and 2 or their equivalent.

6. **THEORY OF ELECTRICITY AND MAGNETISM I.** Autumn quarter, 2 h. Winter quarter, 3 h. M. W. F. 11:00. Taken regularly in the junior year.

The elements of the mathematical theory of electricity and magnetism with applications to the general theory of instruments of fundamental importance in electrical measurements.

Prerequisite: Courses 1, 3 and 4 and calculus; open however to those who are taking Course 4.

7. **THEORY OF ELECTRICITY AND MAGNETISM II.** Spring quarter. 3 h. Taken regularly in the junior year.

An extension of Course 6 devoted chiefly to alternating current theory, problems and applications. Courses 6 and 7 are designed to furnish a thorough knowledge of fundamental ideas and principles and a preparation for the study of advanced electrodynamics.

Prerequisite: Course 6 and calculus.

8. **ELECTRICAL MEASUREMENTS I.** Autumn quarter. Three three-hour periods per week. 3 h. Taken regularly in the junior year.

A laboratory course intended to accompany and to supplement Course 6.

Prerequisite: Courses 1, 2, and calculus.

9. **ELECTRICAL MEASUREMENTS II.** Winter quarter. One lecture and two three-hour laboratory periods per week. 3 h.

This course deals with selected electrical problems of considerable difficulty, requiring a rather advanced knowledge of the theory of electricity and magnetism.

Prerequisite: Courses 6, 8, and calculus.

10. **PROPERTIES OF MATTER.** Spring quarter. Lectures one hour; laboratory, two two-hour periods. 3 h. Omitted 1919-1920.

Lectures on molecular physics and the properties of matter with laboratory work in selected problems of considerable experimental difficulty.

Prerequisite: Courses 1, 2, 3, 4, and calculus.

11. **HEAT AND THERMODYNAMICS.** Autumn quarter. Lectures and recitations. 3 h.

A study of the more important phenomena of heat and elementary thermodynamics.

Prerequisite: Courses 1 and 2, and calculus.

12. **PHOTOGRAPHY.** Spring quarter. Lectures, one hour and two three-hour laboratory periods. 3 h.

A practical course dealing with such topics as the theory and use of lenses, development and developers, enlargements, lantern slides, and the art of photography.

Prerequisite: Courses 1 and 2 or their equivalent.

13. **THE THEORY AND PRACTICE OF OPTICAL INSTRUMENTS.** Autumn quarter. 3 h.

A study of the elementary principles of optics and their application to the theory of optical instruments. The construction, performance, and uses of such instruments as the eye, camera, telescopes, microscopes, projection lanterns, spectroscopes, polariscopes, etc. will be explained in some detail.

Prerequisite: Courses 1 and 2 or their equivalent.

14. **THEORY OF LIGHT.** Winter quarter. Lectures, one hour; two three-hour laboratory periods. 3 h.

A course designed to give the student a critical knowledge of the fundamental phenomena of light. The laboratory work consists of accurate measurements in dispersion, interference, diffraction and polarization.

Prerequisite: Courses 1, 2, and 13.

15. **ELECTRIC WAVES AND RADIO-COMMUNICATION.** Autumn quarter. 3 h.

A study of electromagnetic waves and the theory of radio-communication involving at least a fair knowledge of electricity and magnetism.

Prerequisite: Courses 6 and 7 or their equivalent.

16. **WIRELESS TELEGRAPHY AND TELEPHONY.** Winter quarter. 3 h.

A course dealing with practical methods and the theory and functions of the various apparatus employed.

Prerequisite: Course 15 or its equivalent.

17. **ELECTRICAL MEASUREMENTS III.** Spring quarter. Two three-hour periods. 2 h.

A course in electrical measurements at radio frequencies intended primarily to supplement Course 16, but may be taken by those having had courses 6 to 9 inclusive.

18. **VECTOR ANALYSIS.** Autumn and winter quarters, 3 h.; spring quarter, 2 h. Omitted 1919-1920.

A study of vector analysis as developed by Gibbs with applications to problems in mathematical physics.

Prerequisite: Courses 4, 6, and calculus; differential equations advised.

40. **DESCRIPTIVE ASTRONOMY.** Autumn quarter. 3 h.

A course conducted by means of lectures, recitations and a text. It is designed as a complete course for those wishing a general knowledge of the principal facts, theories and methods of astronomy and provides a necessary introduction to course 41. The lectures are illustrated by slides, models and apparatus.

Prerequisite: An elementary knowledge of trigonometry.

41. **INTRODUCTION TO MATHEMATICAL ASTRONOMY.** Winter and spring quarters. 2 h.

A course dealing with selected portions of spherical, practical and theoretical astronomy involving mathematical treatment of intermediate difficulty.

Prerequisite: Courses 4, 40, and calculus; differential equations advised.

Courses in the College of Engineering may be found on page 179, and those in the Graduate School on page 209.

PSYCHOLOGY

1. GENERAL PSYCHOLOGY. (Education 1.) Two sections. Autumn and winter quarter. M. W. F. 1:00, 2:00, with an additional hour to be arranged for recitations and conferences. 3 h.

This course gives, by means of lectures, recitations, experiments, and demonstrations, a general survey of the essential facts and fundamental laws of mind. It is prerequisite to all other courses in psychology and to the courses in education. The student who expects to make psychology or education a major should take this course in his sophomore year.

2. COMPARATIVE PSYCHOLOGY. (Education 2.) Spring quarter. M. T. W. T. 2:00. 4 h. Continuation of Course 1.

A systematic study of mental development in the race and in the individual. The course will sketch the development of the nervous impulse, of animal sense organs with reference to their habits, of instincts and intelligence in animals, and in cases of arrested development. With these simpler facts as a basis the development of mental functions in the individual in childhood and adolescence will be discussed with reference to educational theory.

3. ADVANCED PSYCHOLOGY. Autumn quarter. Tu. Th. 9:00. 2 h.
Lectures, discussions, readings, and a thesis.

An intensive study of selected problems; introspective exercises and an analytic study of mental phenomena.

Prerequisite: Course 1 or its equivalent.

4. PATHOLOGICAL PSYCHOLOGY. Winter and spring quarters. Tu. Th. 9:00. 2 h. Open on consultation.

Lectures, readings, and a thesis.

Disorders of sensation, memory, imagination, association, the emotions and volition. As Course 2 traces the development of mental functions this course will discuss the order of their impairment. Mental hygiene and a study of such psychoses as throw light on the general and genetic problems of psychology.

Prerequisite: two courses in psychology.

5. **EXPERIMENTAL PSYCHOLOGY.** Three quarters. Tu. Th. 1:00-3:00, laboratory; 3:00, lecture. 3 h.

This course serves as an introduction to experimental psychology and aims to familiarize the student with modern psychological methods, apparatus, and results.

Typical experiments and demonstrations in the psychology of the senses, feeling and movement, with a study of individual differences. Experiments in perception and the higher mental processes; time, intensity, and extensity of mental phenomena; mental and physical tests and measurements; statistical methods.

6. **EDUCATIONAL PSYCHOLOGY.** (Education 2.) Spring quarter. M. W. F. 1:00. 3 h. Continuation of Course 1.

Lectures, readings, and a thesis.

The principles of psychology, and the results of experimental pedagogy which are modifying the course of study and methods of instruction in the older schools of this country will be presented in this course. It is recommended that those students who are primarily interested in education take this course as a continuation of Course 1.

Prerequisite: Course 1, or its equivalent.

7. **THE PSYCHOLOGY OF GRAMMAR-SCHOOL AND HIGH-SCHOOL SUBJECTS.** Tu. Th. 10:00. 2 h.

Lectures, recitations and a thesis. Not offered 1919-1920.

This course describes the mental functions involved in the mastery of each school subject of grammar-school and high-school grade. The topics will be discussed from the point of view of classroom practice, then from that of experimental inquiry, and finally from the point of view of the causes of failure in different subjects. The purpose of the course is to apply the principles of psychology directly to teaching.

8. **THE PSYCHOLOGY OF ADVERTISING.** 2 h. Not offered 1919-1920.

Laboratory exercises and recitations. The course is introductory to systematic courses in Psychology.

The strength of advertisements of various classes will be tested by a rather accurate statistical method. The same

method will be applied to advertisements written by students. Size, position, medium, headlines, legibility and various other problems of advertising will be studied.

9. MENTAL TESTS.

- (a) Winter and spring quarters. Tu. Th. 10:00. 2 h. Lectures, practice, and readings.

The lectures will describe the more important tests of intelligence and motor processes and their application both to children and adults; and the results obtained from the recent wide use of psychological examinations. Under supervision each student will be required to make a number of selected tests.

- (b) Spring quarter. M. W. and F. 10:00. 3 h.

The same as (a) except that a somewhat smaller number of tests will be required of the students.

10. SOCIAL PSYCHOLOGY. (Education 13.)

11. ANATOMY OF THE NERVOUS SYSTEM.

See announcement of the School of Medicine.

For courses for graduates only, see page 210.

ROMANCE LANGUAGES

FRENCH

1. BEGINNERS' COURSE. Three quarters. 8:00, 9:00, 3:00. 5 h.

Grammar, pronunciation, translation, dictation.

2. SECOND-YEAR READING COURSE. Three quarters. M. W. F. 9:00, 11:00. 3 h.

Modern French stories and plays; selected lyrics.

Prerequisite: Course 1, or two years of high-school French; students are advised to take Course 3 with Course 2.

3. SECOND-YEAR PROSE COMPOSITION AND ORAL PRACTICE. Three quarters. Tu. Th. 9:00. 2 h.

Review of French grammar; phonetics.

Prerequisite: Course 1, or two years of high-school French; students are recommended to take Course 2 with Course 3.

4. THIRD-YEAR FRENCH. Autumn quarter. M. W. F. 9:00. 3 h.

Seventeenth Century, Corneille and Racine; advanced prose composition.

5. **THIRD-YEAR FRENCH.** Winter quarter. M. W. F. 9:00. 3 h.
Seventeenth Century, Molière; advanced prose composition.
6. **THIRD-YEAR FRENCH.** Spring quarter. M. W. F. 9:00. 3 h.
Nineteenth Century, Romantic School; modern poetic drama of Rostand; advanced prose composition.
7. **FOURTH-YEAR FRENCH.** Autumn quarter. M. W. 11:00. 2 h.
The Eighteenth Century.
8. **FOURTH-YEAR FRENCH.** Winter quarter. M. W. 9:00. 2 h.
The Sixteenth Century.
9. **FOURTH-YEAR FRENCH.** Spring quarter. M. W. 9:00. 2 h.
French Literary Criticism.
10. **FRENCH LYRIC POETRY.** Autumn quarter. Th. 11:00. 1 h.
11. **FRENCH PHONETICS.** Winter quarter. Th. 11:00. 1 h.
12. **SYNTAX OF THE FRENCH VERB.** Spring quarter. Th. 11:00. 1 h.
13. **FRENCH SHORT STORIES** (omitted 1919-1920). 2 h.
14. **FRENCH DRAMA**, from the beginnings to the present day (omitted 1919-1920). 2 h.
15. **HISTORY OF FRENCH LITERATURE**, general review, with lectures and reports on assigned readings (omitted in 1919-1920). 2 h.

For courses for graduates only, see page 210.

SPANISH

1. **BEGINNERS' COURSE.** Three quarters. 8:00, 9:00, 10:00. 5 h.
Grammar, pronunciation, translation, dictation.
2. **SECOND-YEAR READING COURSE.** Three quarters. M. W. F. 3 h.
Modern Spanish stories and plays.
Prerequisite: Course 1, or two years of high-school Spanish; students are recommended to take Course 3 with Course 2.
3. **SECOND-YEAR COMPOSITION AND ORAL PRACTICE.** Three quarters.
Tu. Th. 2 h.
Prerequisite: Course 1, or two years of high-school Spanish; students are recommended to take Course 2 with Course 3.
4. **THIRD-YEAR SPANISH.** Autumn quarter. M. W. F. 10:00. 3 h.
Nineteenth Century Drama, advanced composition.

5. **THIRD-YEAR SPANISH.** Winter quarter. M. W. F. 10:00. 3 h.
Nineteenth Century Novel, advanced composition.
6. **THIRD-YEAR SPANISH.** Spring quarter. M. W. F. 10:00. 3 h.
Seventeenth Century, Calderon, Lope de Vega, Cervantes.
7. **SPANISH LYRIC POETRY.** Spring quarter. Th. 1 h.
For courses for graduates only, see page 211.

ITALIAN

1. **BEGINNERS' COURSE.** Three quarters. (Omitted in 1919-1920.)
3 h.
Grammar, pronunciation, translation, dictation.
2. **DANTE'S DIVINE COMEDY.** (Omitted in 1919-1920.) 2 h.
3. **ALFIERI AND GOLDONI.** (Omitted in 1919-1920.) 2 h.
For courses for graduates only, see page 211.

NOTE—Students are recommended to take up the Romance Languages in the following order: French, Spanish, Italian. They should not elect courses simultaneously in Spanish and Italian without consulting the instructor.

ELECTIVES IN THE PROFESSIONAL SCHOOLS

In accordance with the general plan outlined on page 54, the courses tabulated below may be elected in the professional schools.

COLLEGE OF ENGINEERING

The following subjects in the College of Engineering may be taken by all students in the College of Liberal Arts:

Mechanical Drawing, 4; Freehand Drawing, 3; Descriptive Geometry, 4; Surveying, 12; Least Squares, 3; Applied Mechanics, 6; Graphic Statics, 4; Kinematics, 3; Hydraulics, 4; Thermodynamics, 3; Dynamo Electric Machinery, 6.

SCHOOL OF LAW

Students in the College of Liberal Arts in their fourth year who declare their intention of proceeding to the degree LL.B. in the University of Colorado, may be allowed credit for thirty-three hours on the completion of all work required in the freshman year of the School of Law.

SCHOOL OF MEDICINE

The two degrees of M.D. and A.B. may be conferred on the completion of seven years' work, one year's credit (45 hours) being allowed on the completion of the full freshman work in the School of Medicine.

Under this arrangement a student would naturally choose either zoology or chemistry as a group major.

Students in the junior or senior year in the College of Liberal Arts, on the approval of their major professor and the Dean, may be allowed to elect up to forty-five hours in the School of Medicine from the following subjects: Anatomy, 13; Histology and Embryology, 12; Freshman Physiology, 12; Sophomore Physiology, 3; Bacteriology, 7; Advanced Bacteriology, 4; Biochemistry, 12; Advanced Biochemistry, 3.

COLLEGE OF COMMERCE

FACULTY

FREDERICK A. BUSHEE, Ph.D.,
Director of the College of Commerce.

The Faculty of the College of Commerce consists of Professors and Instructors whose work contributes to the courses.

GENERAL STATEMENT

FUNCTION

The College of Commerce was opened September, 1906. Its purpose is to provide professional training for the practical demands of business. It aims to prepare men for careers in Domestic and Foreign Commerce and Banking, Insurance, Transportation, Trade and Industry, Journalism, and in branches of the Public Service, like the Consular, in which a knowledge of business is essential. Heretofore universities and colleges have done all they could for the young man who wishes to become a minister, teacher, lawyer, physician, journalist or engineer. The College of Commerce is developed in response to the demands of (1) enlarged commercial operations, (2) the public service, (3) the desire of parents to give their sons a college education and at the same time prepare them for their life work in business.

It is well known that the knowledge of the details of any particular line of business can be acquired only by actual experience. But the broad training given students in this department of the University will enable them to acquire the routine technicalities of any concern more easily than those whose minds have not been made flexible and acute by systematic training. They will thus the more readily assume positions of leadership and responsibility in the business world.

The curriculum of the College of Commerce is prepared with the following aims in view: (1) To furnish a certain amount of culture work which is the mark of college training. (2) To familiarize the student with the nature and workings of the industrial organism. This is attempted by studies in commercial geography, economics and history of commerce, transportation, banking, business organization and management. (3) To impart a certain amount of knowledge of the physical and chemical sciences and their applications to the industrial arts. (4) To give an acquaintance with the articles of commerce and the various industrial processes through which they pass. (5) To make the student acquainted with the principles of commercial law. (6) To supply an equipment in modern languages. (7) To afford an opportunity to acquire some knowledge of a particular line of trade.

ORGANIZATION

The College of Commerce offers four courses: 1. Banking. 2. Manufactures. 3. Journalism. 4. Trade, Transportation and Consular Service.

ADMISSION AND FEES

The requirements for admission and the fees are the same as for the College of Liberal Arts. See pages 27, 33.

SUBJECTS IN THE COLLEGE OF COMMERCE*

(REQUIRED FOR GRADUATION.)

FRESHMAN YEAR

	I.	II.	III.	IV.
	Banking	Mfrs.	Jour.	Trade, Consular Service, etc.
ENGLISH LANGUAGE..	9	9	9	9
SCIENCE	15	Chem. } 15	15	15
HISTORY	9	9	9	9
FRENCH, GERMAN OR SPANISH	15	15	French } 15	15
REQUIRED PHYSICAL OR MILITARY TRAINING	3	3	3	3
	—	—	—	—
	51	51	51	51

SOPHOMORE YEAR

	Math. } 15	Math. } 15	Biol. } 6	Ec. Bot. 3 or (Ec. Geol. 6)
MATH., SCIENCE.....				
PSYCHOLOGY .....	..	..	9	9
HISTORY OR ECON....	15	15	15	15
FREE ELECTIVES.....	15	15	15	18
REQUIRED PHYSICAL OR MILITARY TRAINING.....	3	3	3	3
	—	—	—	—
	48	48	48	48

* In addition to regular courses in the departments open to election, provision will be made for lectures on current problems, and practical topics by prominent business men.

JUNIOR AND SENIOR YEARS

COMMERCIAL LAW...	6	6	6	6
ECONOMICS	40	40	40	40
ENGLISH LANGUAGE AND LITERATURE OR CLASSICS .....	..	..	30	..
PHYSICS .....	..	15	..	..
FREE ELECTIVES.....	41	26	11	41
	—	—	—	—
	87	87	87	87

The following courses are especially recommended for students in the College of Commerce:

- Principles of Advertising.
- Business Organization and Scientific Management.
- History of Commerce.
- Commercial Geography.
- Economic History of the United States.
- Taxation.
- Transportation.
- Corporations.
- Money and Banking.
- Journalism.
- Diplomatic and Consular Service.
- Modern Accounting.
- Life Insurance.
- Mathematical Theory of Investments.

For a further description of these courses, see departments of Mathematics and Economics and Sociology in the College of Liberal Arts.

COLLEGE OF EDUCATION

FACULTY

FRANK E. THOMPSON, A.B.,
Director of the College of Education.

The Faculty of the College of Education consists of Professors and Instructors in the College of Liberal Arts whose work contributes to the various courses.

GENERAL STATEMENT

ORGANIZATION

A College of Education, to be a division of the College of Liberal Arts, was authorized by the Board of Regents in January, 1908. The report of the committee on a course of study was adopted in April, and the College was regularly opened for work in September of that year.

FUNCTION

It is intended that this College shall provide systematic and comprehensive training for those who may choose education as a *profession*. That there may be such a profession becomes every year more apparent, and it becomes apparent, too, that preparation for service in it must be as complete as for service in other professions. No human endeavor is more important than education; no class of workers should be more carefully prepared than teachers. The need of the present time, expressed in most quarters in a demand, is that many of the teachers in the elementary schools, all of the teachers in the high schools, and all persons engaged in supervision of instruction shall have as a minimum of scholarship the A.B. degree, or its equivalent, and shall have made intensive study of the history, theory and practice of education. There is need in each state for at least one professional school of collegiate rank which shall afford opportunity for training, both in theory and practice, for teaching, supervisory, and administrative positions in elementary, secondary, and normal schools.

The College of Education is designed to satisfy this need; it is a device of organization and administration to secure for the teacher studies along pertinent lines and in right proportions and sequence. The student looking toward teaching as a profession is assisted and directed in the choice and prosecution of his work from the time of his matriculation until his graduation. He does not sacrifice anything of the culture of the Liberal Arts course.

DESIGN OF CURRICULUM

The curriculum is designed to furnish to the prospective teacher who would be thoroughly equipped for his work:

1. Courses calculated to give sound scholarship and that culture rightly expected of the college graduate.
2. Courses in the subjects he expects to teach, of such character and so organized in sequence that when graduated he will be in some measure an authority in these subjects.
3. Courses that will give knowledge of:
 - a. The constitution and needs of society.
 - b. Child and adult natures and their possibilities for modification.
 - c. The educational values of the various school subjects.
 - d. The art of instruction—this knowledge to be both general and concrete and to come in large measure from actual practice in teaching.
 - e. The principles underlying the organization and management of public schools.
 - f. Educational history and its significance, both for the present and the future.

ADMISSION, FEES, AND ADVANCED STANDING

See pages 26, 27, 33.

COURSES OF STUDY LEADING TO THE DEGREE BACHELOR OF ARTS AND A BACHELOR'S DIPLOMA IN EDUCATION

The course of study of the College of Education covers a period of four years, 186 hours of credit being required for graduation. Graduates receive the degree of Bachelor of Arts and a Bachelor's Diploma in Education, which latter certifies that the holder has specialized in the theory and art of education.

The general regulations of the College of Liberal Arts apply in the College of Education.

The course of study is distributed as follows:

English Language	9 hours
Classics and Mathematics, Mathematics and Science, or Science and Classics.....	18 hours
History or Economics	9 hours
Psychology (General and Educational).....	9 hours
History and Philosophy of Education.....	9 hours
Principles of Education.....	5 hours

Public Education: Its Organization and Management	4 hours
Principles and Practice of Teaching.....	9 hours
Public-School Program of Studies.....	3 hours
Principles of Economics, or additional Education or Psychology, or Sanitary Science, or Sociology	6 hours
Group Electives, Major and Minors (subjects the student expects to teach).....	75 hours
Students in this department should be particularly careful to take Psychology and History of Education in their sophomore year.	

GROUPS OF MAJORS AND MINORS

The purpose of the group elective requirement is to secure on the part of the teacher a thorough and systematic knowledge of the subject or subjects he proposes to teach. Usually the teacher in the secondary school is required to teach two or more subjects. Hence it is desirable that he should have a careful and extensive preparation in one subject and sufficient preparation for teaching at least the elementary steps of two or three additional subjects.

The groups of majors and minors are uniform with those of the College of Liberal Arts. See page 57.

TEACHERS APPOINTMENTS OFFICE

See page 46.

STATE DIPLOMAS

The 17th General Assembly enacted House Bill No. 423, in which Sections 4 and 7 provide as follows:

Sec. 4. The State Board of Education shall issue State diplomas upon application, without examination, to applicants who shall be graduates of colleges situated within the State of Colorado, which maintain a standard four-year course of collegiate work and require four standard years of high-school work or its equivalent for admission, and who shall also exhibit evidence satisfactory to the State Board of Education of good moral character, and who shall also present evidence to the State Board of Education that they have twenty-four months of successful teaching experience, and who shall also produce evidence satisfactory to the State Board of Education, of professional training equivalent to at least one-sixth of a stand-

ard four-years' college course in at least three of the following groups of subjects, one of which shall be Practice Teaching, to-wit:

- (1) General and Educational Psychology.
- (2) History of Education.
- (3) Science and Principles of Education.
- (4) Practice Teaching and Special Methods.
- (5) Organization and Management of Schools.
- (6) Philosophy, Sociology and Anthropology.

Sec. 7. State diplomas, granted under the provisions of this act, shall license the holders thereof to teach in the public schools of any county, city, town, or district in the State without the necessity of any other examination for a period of five years, unless sooner revoked by the State Board of Education, and at the expiration of said time, the same may be renewed for a like period of five years in the discretion of the State Board of Education, and at the expiration of this time, the same may be renewed for life upon presentation to the State Board of Education of satisfactory evidence of professional growth and efficiency; *Provided*, That the State Board of Education shall issue upon application, without examination, to those persons who possess the qualifications set forth in Section 4 of this act, experience in teaching alone excepted, a temporary, non-renewable certificate to teach for five years in the public schools of Colorado.

COLLEGE OF HOME ECONOMICS AND SOCIAL SERVICE

FACULTY

LAWRENCE W. COLE, Ph.D.

Director of the College of Home Economics and Social Service.

The Faculty of the College of Home Economics and Social Service consists of Professors and Instructors in the College of Liberal Arts, School of Medicine, College of Pharmacy, and the Training School for Nurses, whose work contributes to the various courses.

REGULAR COURSES

FUNCTION

The courses of study in the College of Home Economics and Social Service are designed primarily for two classes of students: (a) Those who desire a four years' course in Household Science and Art in preparation for the management of a home or for teaching these subjects. A wise selection of electives permits this preparation to be so supplemented by arts courses as to constitute a liberal education. (b) Those who desire to enter social service activities, such as belong to the work of charitable and corrective institutions, social settlements, etc.

ADMISSION AND FEES

Entrance requirements and fees for matriculation are those for admission to the College of Liberal Arts, but fees for materials used and breakage will be charged for certain laboratory courses in Home Economics. See pages 27, 33.

DEGREE AND CERTIFICATE

Those who complete satisfactorily a four years' course in Home Economics will receive the B.S. degree.

The course preparatory to social service may be so arranged that students will have preliminary training of considerable value even if obliged to drop the work at the close of the first year. A certificate showing the work done will be issued to students who complete either one or two years of the course.

COURSE IN HOME ECONOMICS

FRESHMAN YEAR

AUTUMN QUARTER

ENGLISH	3
INORGANIC CHEMISTRY	5
*GARMENT MAKING	3
ELECTIVES	4
PHYSICAL EDUCATION	1
	<hr/> 16

WINTER QUARTER

ENGLISH	3
INORGANIC CHEMISTRY	5
*GARMENT MAKING	3
ELECTIVES	4
PHYSICAL EDUCATION	1
	<hr/> 16

SPRING QUARTER

ENGLISH	3
INORGANIC CHEMISTRY	5
*ELEMENTARY FOODS	3
ELECTIVES	4
PHYSICAL EDUCATION	1
	<hr/> 16

SOPHOMORE YEAR

AUTUMN QUARTER

ORGANIC CHEMISTRY	3
SELECTION AND PREPARATION OF FOODS	3
BACTERIOLOGY	4
PSYCHOLOGY	3
ART AND DESIGN	3
PHYSICAL EDUCATION	1
	<hr/> 17

WINTER QUARTER

ORGANIC CHEMISTRY	3
SELECTION AND PREPARATION OF FOODS	3
†ECONOMIC BOTANY	3
PSYCHOLOGY	3
ART AND DESIGN	3
PHYSICAL EDUCATION	1
	<hr/> 16

SPRING QUARTER

ORGANIC CHEMISTRY	3
SELECTION AND PREPARATION OF FOODS	3
TEXTILES	3
PSYCHOLOGY	3
ELECTIVES	2
PHYSICAL EDUCATION	1
	<hr/> 16

* Required of students who do not offer household science or art for entrance.

† Economic Botany may be elected with advantage in the freshman year as it is a desirable introduction to Bacteriology.

JUNIOR YEAR

AUTUMN QUARTER		WINTER QUARTER	
THE HOUSE	2	THE HOUSE	2
PHYSIOLOGY	2	PHYSIOLOGY	2
DRESSMAKING	3	DRESSMAKING	3
MEAL PLANNING AND SERVING	3	MEAL PLANNING AND SERVING	3
ELECTIVES	5	ELECTIVES	5
—		—	
15		15	

SPRING QUARTER

THE HOUSE	2
BIOCHEMISTRY	5
DRESSMAKING	3
ELECTIVES	5
—	
15	

SENIOR YEAR

AUTUMN QUARTER		WINTER QUARTER	
HOUSEHOLD MANAGEMENT	3	HOUSEHOLD MANAGEMENT	3
*CATERING	3	*CATERING	3
SOCIOLOGY	2	SOCIOLOGY	2
NUTRITION	4	NUTRITION	4
ELECTIVES	3	ELECTIVES	3
—		—	
15		15	

SPRING QUARTER

HOUSEHOLD MANAGEMENT	2
*CATERING	3
SOCIOLOGY	2
CARE OF THE CHILD	2
ELECTIVES	6
—	
15	

* Elective.

COURSE PREPARATORY TO SOCIAL SERVICE

Students preparing themselves for social service work will find no trouble in selecting a course in consultation with the Director of the College of Home Economics. They will naturally choose their electives largely in economics, sociology and biology.

COMBINED COURSE FOR B.S. AND NURSE'S DIPLOMA (five years)

The work consists of three years in the College of Liberal Arts, followed by two years in the University of Colorado Hospital.

This course is offered as a contribution to the movement to place the standards of the nursing profession on a thoroughly high level, and to enlarge the possibilities for young women interested in this general line of work. Students who complete the course should find themselves generously equipped for various positions of responsibility in hospitals, asylums, city and state departments of health, school inspection work and similar fields.

Following is the work to be done in the College of Liberal Arts arranged for three academic years, each having three quarters.

Students preparing themselves to become school nurses should elect three hours of Education each quarter of their junior year.

FRESHMAN YEAR

ENGLISH	9
INORGANIC CHEMISTRY	15
HISTORY OR ECONOMICS	9
PHYSICAL EDUCATION	3
ELECTIVES	9

 45

SOPHOMORE YEAR

FOREIGN LANGUAGE	15
ENGLISH LITERATURE	6 or 9
ORGANIC CHEMISTRY	9
BIOLOGY	8
SANITARY SCIENCE AND PUBLIC HEALTH	2
BIOCHEMISTRY	5
PHYSICAL EDUCATION	3

 48 or 51

JUNIOR YEAR

PSYCHOLOGY	9
SOCIAL PROBLEMS	6
NUTRITION	8
ANATOMY, PHYSIOLOGY, AND HYGIENE	6
BACTERIOLOGY	4
ELECTIVES	15

 48

COLLEGE OF ENGINEERING

FACULTY

GEORGE NORLIN, Ph.D., President of the University.

*MILO S. KETCHUM, C.E., Dean; Professor of Civil Engineering.

†HERBERT S. EVANS, E.E., Professor of Electrical Engineering.

JOHN A. HUNTER, M.E., Professor of Mechanical Engineering.

‡WILLIAM BLACK, M.E., Professor of Steam and Gas Engineering.

¶WHITNEY C. HUNTINGTON, M.S., C.E., Professor of Structural Engineering.

CHARLES S. SPERRY, A.B., C.E., Professor of Engineering Mathematics.

||HERBERT B. DWIGHT, E.E., Professor of Electrical Engineering.

JOHN BERNARD EKELEY, Ph.D., ScD., Professor of Chemistry.

*OLIVER C. LESTER, Ph.D., Professor of Physics.

§HARRY A. CURTIS, B.S. (Ch.E.), Ph.D., Professor of Physical Chemistry.

xJAMES A. MERRITT, Captain U. S. A., Retired, Professor of Military Science and Tactics.

JAY W. WOODROW, Ph.D., Professor of Physics.

||DAVID R. JENKINS, E.E., Director of Electrical Standardizing Laboratory; Assistant Professor of Electrical Engineering.

FRANK S. BAUER, M.E., Assistant Professor of Mechanical Engineering.

FRANK G. ALLEN, B.S. (M.E.), Assistant Professor of Engineering Drawing.

§IVAN C. CRAWFORD, C.E., Assistant Professor of Civil Engineering.

WALTER F. MALLORY, B.S. (M.E.), Assistant Professor of Mechanical Engineering.

* On leave of absence, autumn quarter, 1918-1919, for war service.

† Acting Dean of the College of Engineering during the absence of Dean Ketchum.

‡ Died February 6, 1919.

¶ Assistant Dean of the College of Engineering during the absence of Dean Ketchum.

|| Resigned January 1, 1919.

§ On leave of absence for war service.

x Resigned November, 1918.

PHILIP B. McDONALD, B.S., E.M., Assistant Professor of Engineering English.

*SIEBELT L. SIMMERING, M.E., Assistant Professor of Mechanical Engineering.

PAUL M. DEAN, Ph.D., Assistant Professor of Chemistry.

OSCAR A. RANDOLPH, Ph.D., Assistant Professor of Physics.

JESSIE HUTSINPILLAR, A.M., Instructor in Engineering English.

CHARLES M. McCORMICK, E.E., Instructor in Electrical Engineering.

†CLARENCE L. ECKEL, B.S. (C.E.), Instructor in Civil Engineering.

WAYNE S. BEATTIE, B.S. (M.E.), Instructor in Mechanical Engineering.

‡LESLIE E. MINER, B.S., Instructor in Civil Engineering.

§RUSH E. THOMAS, B.S. (C.E.), Instructor in Civil Engineering.

PARKER R. WHITNEY, B.S. (C.E.), Instructor in Civil Engineering.

WALDO E. BROCKWAY, B.S. (C.E.), Instructor in Civil Engineering.

WILLIAM F. BRUBAKER, B.S. (C.E.), Instructor in Engineering Drawing.

Q. RANDOLPH DUNGAN, B.S. (Ch.E.), Instructor in Engineering MATHEMATICS.

CHARLES A. HUTCHINSON, A.M., Instructor in Engineering Mathematics.

¶ALBERT S. ROMIG, B.S. (M.E.), Instructor in Engineering Mathematics.

HERMAN G. STRAUSS, B.S. (C.E.), Instructor in Engineering Mathematics.

¶LOUIS C. STERN, B.S. (C.E.), Instructor in Civil Engineering.

HAROLD T. SEARS, B.S. (M.E.), Instructor in Mechanical Engineering.

JOHN G. THORPE, B.S. (E.E.), Instructor in Electrical Engineering.

**ELLERT L. McGRATH, B.S. (C.E.), Instructor in Engineering Mathematics.

***HOWARD P. BUNGER, B.S. (C.E.), Instructor in Civil Engineering.

****FRED R. DUNGAN, B.S., Instructor in Civil Engineering.

* Appointed April, 1919.

† On leave of absence for war service.

‡ Resigned January 15, 1919.

§ Resigned April 4, 1919.

¶ Resigned March 15, 1919.

¶ Died October, 1918.

** Appointed March 1, 1919.

*** Appointed March 1, 1919, resigned April, 1919.

**** Appointed April, 1919.

HORACE B. VAN VALKENBURGH, M.S., Instructor in Chemistry.

BENJAMIN D. CORNELL, A.M., Instructor in Chemistry.

HERMAN ESCHENBURG, Assistant in Civil Engineering.

WENDELL T. HEDGCOCK, Assistant in Civil Engineering.

ALBERT S. ANDERSON, Assistant in Engineering Mathematics.

DONALD H. TIPPETT, Assistant in Engineering English.

LEROY A. MACCOLL, Assistant in Physics.

PROFESSORS AND INSTRUCTORS IN OTHER DEPARTMENTS

Giving Instruction in the College of Engineering.

RUSSELL D. GEORGE, A.M., Professor of Geology.

CLOUGH T. BURNETT, M.D., Professor of Bacteriology.

RALPH D. CRAWFORD, Ph.D., Professor of Mineralogy and Petrology.

GENERAL STATEMENT

PURPOSE

The College of Engineering was established by the Regents in 1893. The aim in engineering education is to give a thorough training in science, mathematics, language, and mechanics, and in addition to give fundamental courses in engineering so that the graduate may be prepared to enter the profession of engineering.

The work of the first two years of all courses, with a few minor exceptions, is the same. It is aimed in these years to lay a broad foundation for the more specialized work of the last two years. To this end the work is largely theoretical in character, and comprises courses in mathematics, physics, mechanical drawing, rhetoric, and the elements of engineering subjects. Class-room and lecture work is supplemented wherever practicable by laboratory courses.

In the last two years the work is more specialized, and the fourth year is almost entirely devoted to technical work in the several branches of engineering.

REQUIREMENTS FOR ADMISSION

While the regular time for entrance to the College of Engineering is the opening of the first quarter, the subjects are repeated in such a manner that students entering at the opening of any quarter may proceed with their work without loss of time.

For details with reference to admission, see pages 26, 28.

ADMISSION TO ADVANCED STANDING

Students from other institutions will be admitted to any class not later than the autumn quarter of the senior year on passing examinations in the subjects given in the preceding years in the College of Engineering, or on presentation of satisfactory certificates, showing that the required work has been done in other technical schools. A certificate of honorable dismissal will also be required.

Graduates from other colleges will be admitted without examination, and allowed to pursue such courses as their previous work will permit.

By proper election of subjects in the collegiate course, such as sciences, mathematics, and languages, a graduate of the College of

Liberal Arts can obtain his engineering degree in two years. Such a course affords a very broad general training, and is to be highly recommended. Students who expect to complete both the arts and engineering courses should consult the Dean of the College of Engineering before registering in the University.

DEGREES

Upon the satisfactory completion of the prescribed and elective work in any course, the degree, Bachelor of Science in the course pursued, will be conferred.

The degree Master of Science (M.S.) is given upon completion of one year's graduate work in residence after having obtained the degree Bachelor of Science in Engineering. The year's work requires forty-five (45) hours' credit, of which at least nine (9) hours shall be devoted to a thesis.

A candidate for the degree Master of Science in Sanitary Engineering must have received the degree B.S. in Engineering from this University; or if graduated elsewhere, he must satisfy the faculty that he possesses equivalent attainments. In his previous work he must have included courses in Elementary Bacteriology, Water Supply, Sewerage, and Structural Engineering. Study and residence for not less than one year and a thesis on an approved subject are required. A year's work includes forty-five (45) hours, of which not less than nine (9) hours should be given to the thesis.

The degree Civil Engineer (C.E.), Electrical Engineer (E.E.), or Mechanical Engineer (M.E.), is given for one year's academic work, and a thesis, after the candidate has had at least one year's responsible charge of engineering work. The year's work requires forty-five (45) hours' credit, not less than thirty (30) hours of which must be in the same line as the candidate's undergraduate work, and the thesis which requires at least nine (9) hours' credit, or a total of fifty-four (54) hours, required for the degree. One year of residence is required of all resident graduate students. The academic work for graduates of this institution need not be done in residence. A non-resident candidate must be registered for at least two years before coming up for the degree of Engineer.

For further details of graduate work, see the Graduate School.

EQUIPMENT

BUILDINGS.

The College of Engineering occupies three buildings situated at the eastern end of the quadrangle. The buildings are well planned for engineering instruction.

ENGINEERING RECITATION BUILDING. This building contains the general recitation rooms, and drawing rooms for freshman drawing and sophomore surveying.

ENGINEERING SHOPS BUILDING. The one-story sections contain the wood shops, the machine shop, the forge shop, the foundry, and the mechanical engineering and oil-testing laboratories. The one-story sections are lighted by means of a modified saw tooth roof. The two-story section contains the offices, recitation rooms and drawing rooms of the department of Mechanical Engineering.

ENGINEERING LABORATORIES BUILDING. The one-story sections contain the Applied Mechanics Laboratory, the Hydraulics Laboratory, the Electrical Engineering Laboratories, the Standardizing Laboratory and the Engineering Library. The one-story sections are lighted by means of a modified saw tooth roof. The offices, recitation and drawing rooms of the Electrical Engineering Department are on the first floor of the two-story section. The offices, recitation and drawing rooms of the Civil Engineering Department are on the second floor of the two-story section.

CIVIL ENGINEERING EQUIPMENT.

The Department of Civil Engineering possesses an extensive equipment of surveying instruments of the various standard makes, consisting of engineer's transits, solar attachments, mining transits, compasses, engineer's levels, solar compasses, plane tables, a sextant, barometers, chains and tapes, as well as smaller instruments.

The department has two bridge extensometers, manufactured by the Wissler Instruments Works, together with other necessary equipment for the determination of stresses in bridge trusses due to static and moving loads.

Standard apparatus for determining color, turbidity, and other physical properties of water, has been added to the facilities for instruction in sanitary engineering.

The department also possesses an ample collection of drawings, blue prints, and photographs for use in design.

Cement Laboratory.

The Cement Laboratory is equipped with a 2,000-pound Fairbanks shot machine, a 2,000-pound Riehle cement machine, briquette molds, tanks, Gilmore needles, vicat apparatus, sieves, hot water tanks, specific gravity apparatus, slate slabs, sample barrels of cement, and other necessary apparatus.

Hydraulics Laboratory.

The equipment of the Hydraulics Laboratory consists of tanks supplied with various shaped notches and orifices for discharge instruments, pipes arranged for determining resistance to flow in same, standard orifices and tubes. The laboratory also contains a Venturi meter, water meters, piezometers, current meters, an A Doble 12-inch experimental water wheel equipped for experimental work, three centrifugal pumps, Pitot's tubes, a hook gage, platform scales, hose, and various smaller pieces of hydraulic apparatus.

Laboratory of Applied Mechanics.

The laboratory of Applied Mechanics is equipped with a 30,000-pound Olsen testing machine; a 100,000-pound Olsen testing machine; a 200,000-pound Riehle testing machine that will test a 16-foot beam and an 8-foot column; extensometers; compressometers; a 50,000-in.-lb. Olsen torsion testing machine; a stone saw; and miscellaneous small tools and apparatus necessary for making commercial tests of iron, steel, brick, stone and wood. The laboratory is equipped with a brick rattler, and all other equipment necessary for making commercial tests of paving brick. The equipment of the cement laboratory is available for work in testing cements, mortars, and concrete.

Road Materials Testing Laboratory.

The equipment of the road materials testing laboratory consists of a Page impact machine for testing toughness of rock; a Page impact machine for cementation test; a two-cylinder abrasion machine, Deval type; a Dorry hardness machine; a grinding lap; drying oven; drill press; diamond stone saw; a ball mill, and other minor equipment for making commercial tests of road materials.

ELECTRICAL ENGINEERING LABORATORIES.

The Electrical Engineering Laboratories are well equipped for the study of direct and alternating current appliances, electrical

testing, and the investigation of problems concerning the design, installation and operation of electrical apparatus.

Dynamo Laboratories.

The laboratories include in their equipment twelve complete motor-generator sets for testing purposes. These twelve sets range in capacity from one to fifty horse-power and include both direct current and alternating current motors and generators of various types and designs; some are direct connected, and some are belt connected. There are three double current generators that may be used as single-phase or three-phase synchronous converters, and also a regulating-pole synchronous converter with special features. In addition there is a large amount of miscellaneous equipment such as: a special convertible laboratory set; railway motors; Brush arc-lighting dynamos, etc. Switchboards with plugs and jacks, and arranged for trunking between different laboratories, are provided in each laboratory. Control devices and apparatus are provided for all equipment. Prony brakes and a cradle dynamometer are provided for individual tests. The University power plant is available for testing purposes and affords special opportunities for commercial and operation tests.

Transformer Laboratory.

The transformer equipment comprises four three-phase banks of transformers for various capacities; two sets of transformers for two- to three-phase transformation, or vice versa; an auto-transformer of special design, giving wide range of voltages; a twelve light constant current transformer; a Cooper-Hewitt mercury-arc rectifier; and other transformers for special purposes.

Photometry Laboratory.

The photometer room contains a Reichsanstalt photometer with a 250 centimeter scale, equipped with both Bunsen and Lummer Brodhun screens, a special integrating arc-light photometer, a 5-foot Ulbricht sphere, and a Macbeth illuminometer. The standards include an amylacetate (Hefner) lamp, and seasoned carbon and tungsten incandescent lamps certified by the United States Bureau of Standards. The necessary accessories for exact photometric work are included in the equipment.

Telephone Apparatus.

For the use of classes in telephony, there is a complete telephone laboratory equipment, consisting of a number of different types of subscribers' sets, together with the necessary central office apparatus and protective devices.

High Frequency and High Potential Equipment.

For the investigation of high tension and high frequency phenomena, the transformer laboratory is equipped with a 22,000 volt transformer, a 50,000 volt special testing transformer, a large condenser, and a number of Tesla coils of special construction.

In addition to the high frequency and high potential equipment described above, there is a three-unit oscillograph with a full complement of accessories for observing and photographing the actual wave shapes of alternating voltage, current, and flux. A one hundred and fifty mile adjustable artificial transmission line, equivalent to one phase of the Colorado Power Company's line is another piece of special apparatus in this laboratory.

Electrical Standardizing Laboratory.

The department has a very complete equipment for testing and calibrating all types of electrical measuring instruments for both alternating and direct currents.

Besides the standards, which are among the best obtainable, the equipment comprises a number of motor-generator sets from which may be obtained a wide range of voltages and currents, and all commercial frequencies and power factors.

Measuring Instruments.

The department possesses a large equipment of wattmeters, alternating and direct current ammeters and voltmeters of various ranges and representative makes.

A great variety of integrating wattmeters are used for experimental purposes, and synchronizers, water rheostats, two-lamp banks, a transformer bank and other accessories are provided for testing work.

Commercial Testing.

The University power plant affords the students an excellent opportunity for making commercial tests. The equipment consists

of a 150-K.W. three-phase slow speed unit; a 75-K.W. three-phase direct connected alternator with belted exciter; a 35-K.W. direct current compound generator, direct connected; a 25-K.W. steam turbine exciter unit; a 35-K.W. motor generator set; and a thoroughly modern ten-panel switchboard.

MECHANICAL ENGINEERING LABORATORY.

The Mechanical Engineering Laboratory contains necessary apparatus for testing viscosity and other qualities of lubricating oils; calorimeters for determining dryness and heat of steam; injectors and water meters for measuring water for boiler trials; thermometers and pyrometers for measurement of temperatures; Bunte gas burrettes and chemical reagents for tests of chimney flue gases; anemometers for study of heating and ventilation; calorimeters for the determination of the value of fuels; indicators, reducing motions and planimeters for indicator tests of engines; hydrometers for determinations of specific gravity of liquids; micrometers and extensometers for fine measurements; gauges and manometers for pressures; a Westinghouse Air Brake outfit; an hydraulic ram, engines, pumps, condensers, and a two-ton ice machine. The University power plant and heating system, consisting of three boilers of 600 horse-power capacity, a 225 horse-power Murry Corliss engine, a 125 horse-power Chuse engine, a Leyner air compressor, a 50 horse-power Harrisburg engine, several blowers and pumps furnish opportunities for efficiency tests of boilers with different fuels and of the engines at varying loads.

Workshop Equipment.

The forge equipment consists of the latest type of Buffalo down-draft forges, each with anvil, providing accommodations for twenty students at each session, and also accessory tools for forging, welding, and tool dressing.

The foundry contains a Newton cupola furnace, capable of melting two tons of iron per hour, ladles, flasks, and all necessary small tools, and a stock of patterns. The forges and cupola are served by three centrifugal fans, which are operated by a ten horse-power electrical motor.

The machine shop is equipped with iron workers' benches, planers, a milling machine, speed lathes, engine lathes, a shaper, grindstones, and other tools.

The wood shops occupy two rooms on the first floor, each shop has its own tool room; and is well equipped with benches and speed lathes for fitting and turning work.

GENERAL ENGINEERING DRAWING.

The apparatus for instruction and practice consists of over one hundred models, two folding plane frames of special design, a pantograph, a universal drafting machine, and numerous special drawing instruments. Besides the usual apparatus of frames, bath, and dark room for sun blue printing, the department has an electric blue printing machine.

ENGINEERING LIBRARY.

In addition to books on engineering and scientific subjects in the main University library there is an engineering library located in the Engineering Laboratories Building. The engineering library contains files of bound volumes of proceedings and transactions of engineering societies, and of most of the best known engineering magazines in America and Europe. A trained librarian is in charge of the engineering library, which is operated as a branch of the main library of the University. The files of proceedings of societies and magazines are made more usable through a very complete set of indexes to engineering literature. The library also contains the standard encyclopedias and dictionaries, as well as numerous standard reference books.

LABORATORY FEES (FOR MATERIAL)

A laboratory fee of \$2.00 per term hour is charged in all laboratory, shop and field courses in all departments except Engineering Chemistry and Engineering Physics.

The laboratory fees in Engineering Chemistry are \$2.75 for each term hour in the laboratory in Engineering Chemistry 2, 3 and 4, and \$1.75 per term hour for each laboratory hour in all other courses in Engineering Chemistry.

The laboratory fees in Engineering Physics are \$3.00 per term hour in Engineering Physics 51, and \$2.00 per term hour in all other courses.

A fee of \$1.00 per term hour is charged in all drawing and design courses.

The number of term hours for which fees are charged is shown by numbers in parentheses in the schedule of courses.

For fees in Geology, see page 34.

LIBRARY FEE

A library fee of \$1.50 per quarter is charged each student registered in the College of Engineering. The library fees are administered by a committee of the Engineering Faculty and are used for the purchase of books and periodicals for the Engineering library.

ENGINEERING COURSES

CIVIL ENGINEERING

This course is especially arranged to meet the needs of the Irrigation, Highway, Structural, and Railway Engineer; and has majors in hydraulics, construction of dams, construction of roads and pavements, location of roads and railroads, location of reservoirs and canals, water power engineering, irrigation engineering, structural engineering, and railroad engineering. While the work is made practical by giving the student a large amount of practice in the field, the drafting and computing room, and the laboratory, the main object is the development of the mental faculties and judgment of the student.

The general studies and surveying of the first two years lead up to courses in theoretical and applied mechanics, railroads, roads and pavements, hydraulics, graphic statics and geodesy in the junior year, followed in the senior year by courses in bridge design, office building design, design of mill buildings and bins, water supply, sewerage, masonry construction, reinforced concrete construction, irrigation engineering, and railroad engineering.

Besides instruction in strictly engineering subjects, courses are given in economics, rhetoric, geology, bacteriology, and the law of contracts.

Numerous inspection trips are made during the junior and senior years, to give the students an opportunity to get in touch with the practical side of engineering work.

ELECTRICAL ENGINEERING

It is the aim of the Department of Electrical Engineering to provide thorough theoretical and practical training for those desirous of engaging in the various applications of electricity.

Electrical engineering work proper begins in the junior year with courses in electricity and magnetism, theory and method of electrical measurements with direct applications to the theory, design and operation of continuous current apparatus.

The senior year is largely devoted to a study of the design and operation of alternating current apparatus, such as generators, transformers, synchronous and induction motors, rotary converters and transformers; distribution and transmission, electric traction and power plant construction and operation, lighting and metering; the telephone and telegraph; and other applications of electricity to the arts. The design of apparatus is studied by lectures and solution of problems in the drawing room.

Particular attention is given throughout to the proper correlation of classroom study to laboratory work; to this end courses are given in the testing and handling of the various types of direct and alternating current machinery. In connection with the work in lighting and illumination, complete tests are made of the various types of electric lamps. Frequent inspection trips are made to the numerous large power plants in the vicinity, and every opportunity is taken to acquaint the student with the engineering problems of his profession.

MECHANICAL ENGINEERING

This course is intended to train students along the broad lines of Mechanical Engineering. In the second year the students are given practical instruction in elementary studies of the kinematics of machinery and of machine design.

In the junior and senior years the course includes the theory of machine design, valve-gear movements, applied mechanics of both building structures and moving machinery; thermodynamics, including the study of steam, gasoline, and refrigerator engines; the theory of direct current electricity, and practical instruction in designing specific machines and power plants; shop-work; thorough instruction in the electrical and mechanical laboratories, in efficiency tests of engines, boilers, motors, blowers, pumps, calorimeters, injectors, etc., as well as general tests of boiler feed waters, lubricating oils, cements, flue gases, steam, fuels, steel and iron. Students are also given instruction in conducting practical duty trials of power plants.

CHEMICAL ENGINEERING

The great development in the United States during the last decade, of chemical and metallurgical industries, such as the manufacture of alkalies, fertilizers, beet sugar, Portland cement, by-

products from coal and petroleum, acids from sulphide ores, plate glass, pottery, etc., where a combined knowledge of mechanical engineering and chemistry is needed for competent supervision, has suggested the inauguration of this course. The course in Chemical Engineering is designed to give a major in chemistry and to give fundamental training in engineering. Students taking this course pursue courses in chemistry, physics, mathematics, and mechanics for the first two years; in the junior and senior years they are given special instruction in designing chemical machinery and in chemical analysis of fuels, gases, steel and iron, electrometallurgy, etc.

REQUIREMENTS FOR DEGREE BACHELOR OF SCIENCE IN ENGINEERING

CIVIL ENGINEERING

FRESHMAN YEAR*

AUTUMN QUARTER

Algebra (Eng. Math. 1a)†..	3
Trigonometry (Eng. Math. 2a)	2
Mechanical Drawing (Draw. 1).....	4 (3)
General Chemistry (Eng. Chem. 1 and 2).....	4 (1)
Rhetoric (English 1).....	3
	16

WINTER QUARTER

Algebra (Eng. Math. 1b)..	3
Trigonometry (Eng. Math. 2b)	2
Mechanical Drawing (Draw. 2).....	4 (3)
General Chemistry (Eng. Chem. 1 and 2).....	4 (1)
Rhetoric (English 2).....	3
	16

SPRING QUARTER

Analytic Geometry (Eng. Math. 3).....	5
Descriptive Geometry (Draw. 3).....	4 (2)
General Chemistry (Eng. Chem. 1 and 2).....	4 (1)
Rhetoric (English 3).....	3
Engineering Literature (English 4).....	2
	18

SOPHOMORE YEAR

AUTUMN QUARTER

Calculus (Eng. Math. 4a)†.	4
Physics (Eng. Phys. 50 and 51)	5 (1)
Plane Surveying (C.E. 1)...	5 (3)
Roads and Pavements (C.E. 33)	4 (1)
	18

WINTER QUARTER

Calculus (Eng. Math. 4b)...	4
Physics (Eng. Phys. 50 and 51)	5 (1)
Surveying and Mapping (C.E. 2).....	2 (2)
Railroad Curves (C.E. 5)...	2 (1)
Engineering Materials (C.E. 14).....	3
Practical Astronomy (Eng. Phys. 60).....	2
	18

SPRING QUARTER

Calculus (Eng. Math. 4c)...	4
Physics (Eng. Phys. 50 and 51)	5 (1)
Higher Surveying (C.E. 3)	4 (3)
Technical Mechanics—Statics (C.E. 6).....	3
Timber Structures (C.E. 15)	2 (1)
	18

* All freshman students are required to attend technical lectures given each second week during the year.

† These references are to the description of courses. Figures in parentheses indicate the number of three-hour laboratory, drafting, or field periods.

JUNIOR YEAR

AUTUMN QUARTER

Applied Mechanics (C.E. 8)	5
Technical Mechanics—Dynamics (C.E. 7).....	3
Geology (Geol. 3).....	3 (1)
Railroad Engineering (C.E. 34)	5 (2)
Applied Mechanics Laboratory (C.E. 9).....	2 (2)
	<hr/>
	18

WINTER QUARTER

Algebraic and Graphic Statics (C.E. 17).....	5 (2)
Hydraulics (C.E. 11).....	3
Geology (Geol. 3).....	4 (1)
Technical Writing (English 5)	2
Railroad Maintenance (C.E. 35)	2
Structural Details (C.E. 16)	2 (2)
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	18

SPRING QUARTER

Reinforced Concrete (C.E. 29)	2
Bridge Analysis (C.E. 18) ..	3 (3)
Geodesy and Least Squares (Eng. Math. 6).....	3
Architectural Construction (C.E. 21).....	3 (1)
Steam Engines and Boilers (M.E. 5).....	3
Bacteriology (C.E. 37).....	3
Hydraulics Laboratory (C.E. 12)	1 (1)
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	18

SENIOR YEAR

AUTUMN QUARTER

Steel Mill Buildings (C.E. 22)	3
Masonry Construction (C.E. 31)	3
Foundations (C.E. 32).....	2
Water Supply (C.E. 38).....	3
Structural Design (C.E. 23)	5 (5)
Water Power Engineering (C.E. 39).....	2
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	18

WINTER QUARTER

Bridge Design (C.E. 19)....	3
Engineering Contracts (C.E. 44)	3
Sewerage (C.E. 40).....	3
Reinforced Concrete Design (C.E. 30).....	3 (2)
Higher Structures (C.E. 26)	2 (1)
Estimates and Costs (C.E. 43)	2
Hydraulic Design (C.E. 41)	2 (2)
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	18

SPRING QUARTER

Higher Structures (C.E. 27)	4 (2)
Advanced Bridge Design (C.E. 20).....	3 (3)
C.E. Seminar (C.E. 46)....	1
Irrigation Engineering (C.E. 42).....	3
Engineering Administration (C.E. 45).....	3
Railroad Economics (C.E. 36)	2
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	16

ELECTRICAL ENGINEERING

FRESHMAN YEAR*

AUTUMN QUARTER

Algebra (Eng. Math. 1a)†..	3
Trigonometry (Eng. Math. 2a)	2
Mechanical Drawing (Draw. 1)	4 (3)
General Chemistry (Eng. Chem. 1 and 2)	4 (1)
Rhetoric (English 1)	3
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	16

WINTER QUARTER

Algebra (Eng. Math. 1b)...	3
Trigonometry (Eng. Math. 2b)	2
Mechanical Drawing (Draw. 2)	4 (3)
General Chemistry (Eng. Chem. 1 and 2)	4 (1)
Rhetoric (English 2)	3
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	16

SPRING QUARTER

Analytic Geometry (Eng. Math. 3)	5
Descriptive Geometry (Draw. 3)	4 (2)
General Chemistry (Eng. Chem. 1 and 2)	4 (1)
Rhetoric (English 3)	3
Engineering Literature (English 4)	2
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	18

SOPHOMORE YEAR

AUTUMN QUARTER

Calculus (Eng. Math. 4a)†..	4
Physics (Eng. Phys. 50 and 51)	5 (1)
Engineering Materials (E.E. 17)	3
Machine Shop (Shop 9)...	2 (2)
Forging (Shop 4)	2 (2)
Electric and Magnetic Circuits (E.E. 11)	2
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	18

WINTER QUARTER

Calculus (Eng. Math. 4b)...	4
Physics (Eng. Phys. 50 and 51)	5 (1)
Kinematics (M.E. 1)	3
Wood Working (Shop 1)...	2 (2)
Foundry (Shop 6)	2 (2)
Electric and Magnetic Circuits (E.E. 12)	2
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	18

SPRING QUARTER

Calculus (Eng. Math. 4c) ..	4
Physics (Eng. Phys. 50 and 51)	5 (1)
Analytical Mechanics—Statics (Eng. Phys. 52) ..	3
Machine Drawing (M.E. 40)	5 (3)
Electric and Magnetic Circuits (E.E. 30)	1 (1)
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	18

* All freshman students are required to attend technical lectures given each second week during the year.

† These references are to the description of courses. Figures in parentheses indicate the number of three-hour laboratory, drafting, or field periods.

JUNIOR YEAR

AUTUMN QUARTER

Electrical Machinery (E.E. 1)	3
Direct Current Laboratory (E.E. 31).....	2 (2)
Electrical Measurements (Eng. Phys. 55).....	3 (3)
Illumination and Photometry (E.E. 10).....	3
Theory of Electricity and Magnetism (Eng. Phys. 54a)	2
Technical Writing (English 5).....	2
Analytical Mechanics—Dynamics (Eng. Phys. 53)..	3
	<hr/> 18

WINTER QUARTER

Electrical Machinery (E.E. 2)	3
M.E. Laboratory (M.E. 30)	2 (2)
Photometry Laboratory (E.E. 32).....	2 (2)
Hydraulics (C.E. 11).....	3
Thermodynamics (M.E. 6).	2
Theory of Electricity and Magnetism (Eng. Phys. 54b)	3
Steam Engines and Boilers (M.E. 5)	3
	<hr/> 18

SPRING QUARTER

Electrical Machinery (E.E. 3)	3
Direct Current Laboratory (E.E. 33).....	2 (2)
Applied Mechanics (C.E. 8)	5
Applied Mechanics Laboratory (C.E. 9).....	2 (2)
Thermodynamics (M.E. 7).	3
Machine Design (M.E. 44).	3 (2)
	<hr/> 18

SENIOR YEAR

AUTUMN QUARTER

Theory of Alternating Currents (E.E. 4).....	3
Steam Engine Laboratory (M.E. 32).....	3 (3)
Electric Railway Engineering (E.E. 21).....	2
Alternating Current Laboratory (E.E. 34).....	2 (2)
Telephone Engineering (E.E. 7).....	3
Central Station Design (E.E. 40).....	2 (1)
Organization and Management (E.E. 18).....	3
	<hr/> 18

WINTER QUARTER

Theory of Alternating Currents (E.E. 5).....	3
Structural Engineering (C.E. 28).....	3 (1)
Engineering Contracts (C.E. 44).....	3
Alternating Current Laboratory (E.E. 35).....	2 (2)
Transmission and Distribution (E.E. 8).....	2
Central Station Design (E.E. 41).....	3 (3)
Electric Railway Engineering (E.E. 22).....	2
	<hr/> 18

SPRING QUARTER

Theory of Alternating Currents (E.E. 6).....	3
Surveying (C.E. 4).....	3 (2)
E.E. Seminar (E.E. 16)....	1
Experimental Electrical Engineering (E.E. 36)...	3 (2)
Central Station Design (E.E. 42).....	2 (2)
Electric Railway Engineering (E.E. 23).....	2
Transmission and Distribution (E.E. 9).....	2
	<hr/> 16

MECHANICAL ENGINEERING

FRESHMAN YEAR*

AUTUMN QUARTER

Algebra (Eng. Math. 1a)†..	3
Trigonometry (Eng. Math. 2a)	2
Mechanical Drawing (Draw 1)	4 (3)
General Chemistry (Eng. Chem. 1 and 2)	4 (1)
Rhetoric (English 1)	3
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	16

WINTER QUARTER

Algebra (Eng. Math. 1b) ..	3
Trigonometry (Eng. Math. 2b)	2
Mechanical Drawing (Draw. 2)	4 (3)
General Chemistry (Eng. Chem. 1 and 2)	4 (1)
Rhetoric (English 2)	3
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	16

SPRING QUARTER

Analytic Geometry (Eng. Math. 3)	5
General Chemistry (Eng. Chem. 1 and 2)	4 (1)
Descriptive Geometry (Draw. 3)	4 (2)
Rhetoric (English 3)	3
Engineering Literature (English 4)	2
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	18

SOPHOMORE YEAR

AUTUMN QUARTER

Calculus (Eng. Math. 4a)†.	4
Physics (Eng. Phys. 50 and 51)	5 (1)
Kinematics (M.E. 1)	3
Engineering Materials (M.E. 2)	4
Wood Working (Shop 1) ..	2 (2)
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	18

WINTER QUARTER

Calculus (Eng. Math. 4b) ..	4
Physics (Eng. Phys. 50 and 51)	5 (1)
Machine Drawing (M.E. 40)	5 (3)
Heat Treatment of Steel (M.E. 4)	3
Pattern Making (Shop 2) ..	1 (1)
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	18

SPRING QUARTER

Calculus (Eng. Math. 4c) ..	4
Physics (Eng. Phys. 50 and 51)	5 (1)
Technical Mechanics—Statics (C.E. 6)	3
Forging (Shop 3)	3 (2)
Foundry (Shop 5)	3 (2)
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JUNIOR YEAR

AUTUMN QUARTER

Applied Mechanics (C.E. 8)	5
Applied Mechanics Laboratory (C.E. 9).....	2 (2)
Steam Engines and Boilers (M.E. 5)	3
Technical Mechanics—Dynamics (C.E. 7).....	3
Machine Design (M.E. 41).....	5 (3)

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WINTER QUARTER

Electrical Machinery (E.E. 13)	3
Technical Writing (English 5)	2
Valve Gears (M.E. 15).....	2
Thermodynamics (M.E. 8).....	4
Machine Design (M.E. 42).....	4 (3)
Machine Shop (Shop 7).....	3 (2)

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SPRING QUARTER

Electrical Machinery (E.E. 14)	4
Hydraulics (C.E. 11).....	3
E.E. Laboratory (E.E. 37).....	1 (1)
Thermodynamics (M.E. 9).....	3
Mechanics of Machinery (M.E. 23)	3
Machine Shop (Shop 8).....	2 (2)
M.E. Laboratory (M.E. 30).....	2 (2)

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SENIOR YEAR

AUTUMN QUARTER

Structural Engineering (C.E. 28).....	3 (1)
Steam Engine and Boiler Design (M.E. 45).....	3 (2)
Automobiles and Gas Engines (M.E. 12).....	3
Compressed Air (M.E. 18).....	2
Principles of Aviation (M.E. 16)	2
Works Management (M.E. 14)	3
Steam Engine Laboratory (M.E. 31).....	2 (2)

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WINTER QUARTER

Engineering Contracts (C.E. 44).....	3
Refrigeration (M.E. 19).....	3
Steam Engine Laboratory (M.E. 33).....	3 (3)
Hydraulic Machinery (M.E. 13)	2
Steam Engine and Boiler Design (M.E. 46).....	3 (2)
M.E. Seminar (M.E. 21).....	1
Locomotives and Air Brakes (M.E. 11)	3

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SPRING QUARTER

Surveying (C.E. 4).....	3 (2)
Power Plant Design (M.E. 47).....	5 (3)
Steam Turbines (M.E. 17).....	2
Heating and Ventilation (M.E. 10)	3
Railway Operation and Signals (M.E. 20).....	2
M.E. Seminar (M.E. 22).....	1

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CHEMICAL ENGINEERING

FRESHMAN YEAR*

AUTUMN QUARTER

Algebra (Eng. Math. 1a)†..	3
Trigonometry (Eng. Math. 2a)	2
Mechanical Drawing (Draw. 1).....	4 (3)
General Chemistry (Eng. Chem. 1 and 2).....	4 (1)
Rhetoric (English 1).....	3
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	16

WINTER QUARTER

Algebra (Eng. Math. 1b)...	3
Trigonometry (Eng. Math. 2b)	2
Mechanical Drawing (Draw. 2).....	4 (3)
General Chemistry (Eng. Chem. 1 and 2).....	4 (1)
Rhetoric (English 2).....	3
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	16

SPRING QUARTER

Analytic Geometry (Eng. Math. 3).....	5
General Chemistry (Eng. Chem. 1 and 2).....	4 (1)
Descriptive Geometry (Draw. 3).....	4 (2)
Rhetoric (English 3).....	3
Engineering Literature (English 4).....	2
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	18

SOPHOMORE YEAR

AUTUMN QUARTER

Calculus (Eng. Math. 4a)†.	4
Physics (Eng. Phys. 50 and 51).....	5 (1)
Engineering Materials (M.E. 3)	2
Qualitative Analysis (Eng. Chem. 3).....	3 (2)
Quantitative Analysis (Eng. Chem. 4).....	4 (3)
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	18

WINTER QUARTER

Calculus (Eng. Math. 4b)...	4
Physics (Eng. Phys. 50 and 51).....	5 (1)
Kinematics (M.E. 1).....	3
Qualitative Analysis (Eng. Chem. 3).....	3 (2)
Quantitative Analysis (Eng. Chem. 4).....	4 (3)
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SPRING QUARTER

Calculus (Eng. Math. 4c)...	4
Physics (Eng. Phys. 50 and 51).....	5 (1)
Technical Mechanics—Statics (C.E. 6).....	3
Qualitative Analysis (Eng. Chem. 3).....	3 (2)
Quantitative Analysis (Eng. Chem. 4).....	4 (3)
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JUNIOR YEAR

AUTUMN QUARTER

Steam Engines and Boilers (M.E. 5)	3
Technical Mechanics—Dynamics (C.E. 7)	3
Technical Writing (English 5)	2
M.E. Laboratory (M.E. 30)	2 (2)
Machine Drawing (M.E. 40)	5 (3)
Organic Chemistry Lectures (Eng. Chem. 5)	3

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WINTER QUARTER

Applied Mechanics (C.E. 8)	5
Applied Mechanics Laboratory (C.E. 9)	2 (2)
Thermodynamics (M.E. 6)	2
Electrical Machinery (E.E. 13)	3
Machine Design (M.E. 44)	3 (2)
Organic Chemistry Lectures (Eng. Chem. 5)	3

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SPRING QUARTER

Electrical Machinery (E.E. 14)	4
E.E. Laboratory (E.E. 37)	1 (1)
Thermodynamics (M.E. 7)	3
Heat Treatment of Steel (M.E. 4)	3
Organic Chemistry Lectures (Eng. Chem. 5)	3
Organic Preparations (Eng. Chem. 6)	3 (3)

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SENIOR YEAR

AUTUMN QUARTER

Hydraulics (C.E. 11)	3
Works Management (M.E. 14)	3
Surveying (C.E. 4)	3 (2)
Steam Engine Laboratory (M.E. 31)	2 (2)
Physical Chemistry Lectures (Eng. Chem. 7)	3
Ch.E. Seminar (M.E. 25) ..	1
Structural Engineering (C.E. 28)	3 (1)

18

WINTER QUARTER

Engineering Contracts (C.E. 44)	3
Physical Chemistry Lectures (Eng. Chem. 7)	3
Physical Chemistry Laboratory (Eng. Chem. 8) ..	2 (2)
Chemical Engineering Design (M.E. 48)	3 (2)
Chemical Engineering Materials (M.E. 26)	2
Chemistry of Materials (Eng. Chem. 9)	1 (1)
Refrigeration (M.E. 19) ..	3

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SPRING QUARTER

Power Plant Efficiency (M.E. 24)	2
General Shop Work (Shop 10)	1 (1)
Physical Chemistry Lectures (Eng. Chem. 7)	3
Physical Chemistry Laboratory (Eng. Chem. 8) ..	2 (2)
Industrial Chemistry (Eng. Chem. 11)	4
Chemistry of Materials (Eng. Chem. 10)	2 (2)
Steam Turbines (M.E. 17) ..	2

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DESCRIPTION OF COURSES

CIVIL ENGINEERING

DEAN KETCHUM, PROFESSOR HUNTINGTON, ASSISTANT PROFESSOR
CRAWFORD, AND MR. ECKEL, MR. WHITNEY, MR. BROCKWAY
AND MR. DUNGAN:

1. PLANE SURVEYING. Autumn quarter. Two hours lecture, nine hours in field. 5 h.

Instruction is given in the theory of surveying and in the theory, use and adjustment of the compass, level, transit, plane table and sextant. The field work includes pacing and chaining surveys; compass and transit traverses; measurement of angles by repetition; differential, profile, and contour leveling; traverses with the plane-table, etc. Maps and reports are required. Considerable time is given to a study of U. S. Land Survey methods, and to court decisions relating to relocation of corners, lines, and boundaries.

Textbook: Pence and Ketchum's Surveying Manual.

Prerequisite: Eng. Math. 1 and 2, and Draw. 1.

2. SURVEYING AND MAPPING. Winter quarter. Six hours in drawing room. 2 h.

This course covers the calculations of surveys and the preparation of maps and profiles. Calculations are made for the triangulation system of a topographic survey. Some time is given to measurement of angles by repetition and to measurements of base lines and to precise leveling.

Textbook: Pence and Ketchum's Surveying Manual, Johnson and Smith's Theory and Practice of Surveying, and notes by the Department.

Prerequisite: C.E. 1.

3. HIGHER SURVEYING. Spring quarter. One hour lecture, nine hours in field. 4 h.

In this course the different methods of making topographic surveys are discussed. A complete topographic survey based

on a carefully designed triangulation system is made. The calculations are made and a map is drawn.

Textbooks: Pence and Ketchum's Surveying Manual, Johnson and Smith's Theory and Practice of Surveying, and notes by the Department.

Prerequisite: C.E. 1 and 2.

4. SURVEYING. Autumn or spring quarter. One hour lecture, six hours in field. 3 h.

A brief course in surveying and in the theory and use of the level, transit, and other instruments, for electrical, mechanical, and chemical engineering students. The work covers problems in pacing, chaining, compass and transit surveys, profile and contour leveling, laying out buildings, etc.

Textbook: Pence and Ketchum's Surveying Manual.

Prerequisite: Eng. Math. 1, 2 and 3, Draw. 1, and Eng. Phys. 50 and 51.

5. RAILROAD CURVES. Winter quarter. One hour lecture, three hours in field. 2 h.

A study is made of simple, compound, reversed, parabolic curves, and the transition spiral. Instruction consists of recitations, problems, and field locations.

Textbook: Allen's Railroad Curves and Earthwork.

Prerequisite: C.E. 1 and to be taken with C.E. 2.

6. TECHNICAL MECHANICS—STATICS. Spring quarter. 3 h.

The mechanics of engineering rather than of astronomy and physics is here considered. Particular attention is given to developing and fixing fundamental concepts of equilibrium and motion as applied to engineering problems. Both algebraic and graphic methods of the calculation of problems are considered. This course is followed by C.E. 7.

Textbook: Poorman's Applied Mechanics.

Prerequisite: Eng. Math. 4a and 4b and Eng. Phys. 50, to be taken with Eng. Math. 4c.

7. TECHNICAL MECHANICS—DYNAMICS. Autumn quarter. 3 h.

A continuation of C.E. 6.

Textbook: Poorman's Applied Mechanics.

Prerequisite: Eng Math. 4 and C.E. 6.

8. **APPLIED MECHANICS.** Any quarter. 5 h.

This course covers the elasticity of materials; stress and strain; working stresses; resistance of pipes and riveted joints; bending moment; resisting moment; shear; elastic curve of beams; torsion; internal stress; fatigue of metals; etc.

Textbook: Boyd's Strength of Materials.

Prerequisite: Eng. Math. 4, and Eng. Phys. 52 and 53, or C.E. 6 and to be taken with C.E. 7.

9. **APPLIED MECHANICS LABORATORY.** Any quarter. Six hours in laboratory. 2 h.

Experiments on strength of steel, wrought and cast iron; shear on rivets; strength of wood; and tensile and compressive strength of Portland cement, brick and building stone.

Prerequisite: C.E. 8, or to be taken with C.E. 8.

10. **ADVANCED APPLIED MECHANICS.** Elective. 3 h.

This course covers an extended discussion of combined stresses, resilience, stresses in beams, deflection of beams, torsion, pipes and cylinders, curved bars, and arches.

Textbook: Morley's Strength of Materials.

Prerequisite: C. E. 8 and 17.

11. **HYDRAULICS.** Any quarter. 3 h.

This course covers the weight and pressure of water; head; center of pressure, velocity and discharge through orifices, tubes, nozzles, pipes, hose, weirs, conduits, canals, rivers; meters and measurements; motors, turbines, and water wheels.

Textbook: Daugherty's Hydraulics.

Prerequisite: Eng. Math. 4 and Eng. Phys. 52 and 53, or C.E. 6 and 7.

12. **HYDRAULICS LABORATORY.** Spring quarter. Three hours in laboratory. 1 h.

Experiments on flow of water over weirs, through orifices, in open channels and pipes; tests of pumps; reaction and turbine water wheels, etc.; determination of coefficients of friction in hose and pipes.

Prerequisite: C.E. 7, and to be taken with C.E. 11.

13. ADVANCED HYDRAULICS. Elective. 3 h.

An extended study of flow in pipes, nozzles, conduits, canals and rivers; of velocity and discharge; water hammer; dynamic action of streams; turbine and pump theory; hydraulic rams, lifts, hoists and meters.

Textbook: Gibson's Hydraulics and Its Application.

Prerequisite: C.E. 11.

14. ENGINEERING MATERIALS. Winter quarter. 3 h.

A study is made of the properties and requirements for materials used in engineering construction, the effect of different methods of manufacture upon the quality of the material, and specifications and standard tests for materials.

Textbook. Mill's Materials of Engineering, and notes.

Prerequisite: Eng. Math. 3 and to be taken with Eng. Phys. 50.

15. TIMBER STRUCTURES. Spring quarter. One hour lecture, three hours in drawing room. 2 h.

A study of the joints and fastenings used in timber framing, and the details of timber structures. Design and detail drawings of timber trusses, trestles and timber details.

Textbook: Jacoby's Structural Details.

Prerequisite: Draw. 1, Eng. Math. 1 and 2, and C. E. 14.

16. STRUCTURAL DETAILS. Winter quarter. Six hours in drawing room. 2 h.

Design and detail drawings of steel beams, columns, roof trusses and trestles.

The estimation of weight and cost of a steel highway bridge, and the study of bridge details.

Textbook: Ketchum's Structural Engineers' Handbook.

Prerequisite: C.E. 8 and to be taken with C.E. 17.

17. ALGEBRAIC AND GRAPHIC STATICS. Winter quarter. Three hours lecture, six hours in drawing room. 5 h.

The elements of statics by algebraic and graphic methods, and stresses in simple roof trusses and bridges.

Textbook: Ketchum's Design of Steel Mill Buildings.

Prerequisite: C.E. 6, 7 and 8.

18. **BRIDGE ANALYSIS.** Spring quarter. Nine hours in drawing room. 3 h.

This course includes the calculations of stresses in bridges and girders loaded with uniform and concentrated loads, by algebraic and graphic methods; stresses in portals, pins, and other details preliminary to bridge design. Each student calculates the stresses in, and investigates the efficiencies of, the members of a highway bridge.

Textbook: Ketchum's Design of Highway Bridges.

Prerequisite: C.E. 17.

19. **BRIDGE DESIGN.** Winter quarter. 3 h.

A study of principles of design of steel plate girders and truss bridges.

Textbook: Johnson, Bryan and Turneaure's Framed Structures, Part III.

Prerequisite: C.E. 18.

20. **ADVANCED BRIDGE DESIGN.** Spring quarter. Nine hours in drawing room. 3 h.

The detailed design of a railway truss bridge and a railway plate girder bridge, including the making of complete detail drawings and an estimate of weight and cost.

Textbook: Ketchum's Structural Engineer's Handbook, and Johnson, Bryan and Turneaure's Modern Framed Structures, Part III.

Prerequisite: C.E. 19.

21. **ARCHITECTURAL CONSTRUCTION.** Spring quarter. Two hours lecture, three hours in drawing room. 3 h.

A study of the details of architectural construction, including working drawings, perspective, etc.

Prerequisite: C.E. 16 and 17.

22. **STEEL MILL BUILDINGS.** Autumn quarter. 3 h.

A study of steel mill buildings, mine structures, grain elevators, ore bins, retaining walls, etc.

Textbooks: Ketchum's Design of Steel Mill Building, and Ketchum's Design of Walls, Bins, and Grain Elevators.

Prerequisite: C.E. 17 and 18, and to be taken with C.E. 23.

23. **STRUCTURAL DESIGN.** Autumn quarter. Fifteen hours in drawing room. 5 h.

This course covers the detail design of retaining walls, concrete arches, masonry dams, steel mill buildings, and other concrete and steel structures.

Prerequisite: To be taken with C.E. 22, 31 and 32.

24. **OFFICE BUILDINGS.** Elective. Two hours lecture, three hours in drawing room. 3 h.

The design and details of office buildings of steel and of reinforced concrete.

Prerequisite: C.E. 22 and 23.

25. **MINE AND MILL STRUCTURES.** Elective. Two hours lecture, three hours in drawing room. 3 h.

A study of the design of head frames, coal tipples, coal washers and breakers, concentrating plants, and other mine structures.

Textbook: Ketchum's Design of Mine Structures.

Prerequisite: C.E. 22 and 23.

26. **HIGHER STRUCTURES.** Winter quarter. One hour lecture, three hours in drawing room. 2 h.

This course includes the calculation of stresses in statically indeterminate structures. Stresses are calculated in a two-hinged arch, a steel head frame, a braced beam, in continuous beams, in a transverse bent and other statically indeterminate structures.

Textbook: Ketchum's Notes on Statically Indeterminate Structures.

Prerequisite: C.E. 18, 22 and 23.

27. **HIGHER STRUCTURES.** Spring quarter. Two hours lecture, six hours in drawing room. 4 h.

The calculation of stresses in swing bridges, suspension bridges, arch bridges, and cantilever bridges, office building frames, and other statically indeterminate structures.

Textbook: Johnson, Bryan and Turneaure's Framed Structures, Part II, and notes.

Prerequisites: C.E. 26, and to be taken with C.E. 20.

28. **STRUCTURAL ENGINEERING.** Autumn or winter quarter. Two hours lecture, three hours in drawing room. 3 h.

This course includes the calculation of stresses in roof trusses and steel frames by algebraic and graphic methods, and the design of shops and mill buildings.

Textbook: Ketchum's Structural Engineers' Handbook, and notes.

Prerequisite: C.E. 8.

29. **REINFORCED CONCRETE.** Spring quarter. 2 h.

A study is made of the theory of reinforced concrete, and the design of reinforced concrete structures.

Textbook: Hool's and Johnson's Reinforced Concrete Handbook.

Prerequisite: C.E. 17 and to be taken with C.E. 18.

30. **REINFORCED CONCRETE DESIGN.** Winter quarter. One hour lecture, six hours in drawing room. 3 h.

This course includes the preparation of designs and detailed drawings of reinforced concrete bridges and buildings.

Textbook: Hool's and Johnson's Reinforced Concrete Handbook.

Prerequisite: C.E. 29.

31. **MASONRY CONSTRUCTION.** Autumn quarter. 3 h.

A study of cements, concrete, retaining walls, dams, arches, and other masonry and reinforced concrete structures. A complete investigation of a reinforced concrete arch is made, using the elastic theory.

Textbooks: Taylor and Thompson's Concrete, Plain and Reinforced; Baker's Masonry Construction, and Ketchum's Design of Walls, Bins and Grain Elevators.

Prerequisite: C.E. 8, 17, and to be taken with C.E. 23 and 32.

32. **FOUNDATIONS.** Autumn quarter. 2 h.

A study of foundations for bridges and buildings.

Textbook: Jacoby and Davis' Foundations for Bridges and Buildings.

Prerequisite: To be taken with C.E. 23 and 31.

33. **ROADS AND PAVEMENTS.** Autumn quarter. Three hours lecture, three hours in laboratory. 4 h.

A detailed study of country roads and city pavements, together with a study of road building materials, testing, surveys, the design of streets, the construction of modern pavements, road economics, etc.

Prerequisite: To be taken with C.E. 1.

34. **RAILROAD ENGINEERING.** Autumn quarter. Three hours lecture, six hours in field and drawing room. 5 h.

Instruction in railroad engineering consists of field practice, office, and classroom work. Field practice consists of the complete location of a line of railroad. In the office the quantities are calculated, and profiles and a complete map are drawn. In the classroom a detailed study is made of the principles of economic location and construction, maintenance of way, and railway structures and appliances.

Textbooks: Allen's Railroad Curves and Earthwork; Williams' Design of Railroad Location, and references.

Prerequisite: C.E. 1, 2, 3 and 5.

35. **RAILROAD MAINTENANCE.** Winter quarter. 2 h.

Rail and tie renewals, surfacing, manufacture of rails, rail failures, ballast, sidings, crossings, and track accessories, are studied in detail. Some time is given to organization of maintenance forces.

Textbook: Willard's Maintenance of Way and Structures.

Prerequisite: C.E. 34.

36. **RAILROAD ECONOMICS.** Spring quarter. 2 h.

This course covers the economics of the location, design, construction and operation of railways. Some time is given to the valuation of railroads.

Textbook: Williams' Design of Railroad Location, and references.

Prerequisite: C.E. 34, 35, and to be taken with C.E. 45.

37. BACTERIOLOGY. Spring quarter. 3 h.

Lectures and laboratory demonstration.

This course covers a study of bacteriological methods and their application in water analysis and sewerage.

Textbook: Hiss and Zinsser's *A Textbook of Bacteriology*.

Prerequisite: Eng. Phys. 50 and 51.

38. WATER SUPPLY. Autumn quarter. 3 h.

This course covers the principal features of water works design and construction, including quantity and quality of potable water; choice of supply; the designing of distribution systems, reservoirs, dams, and elevated tanks.

Textbook: Turneaure and Russell's *Public Water Supplies*.

Prerequisite: C.E. 11 and 37.

39. WATER POWER ENGINEERING. Autumn quarter. 2 h.

Stream flow including hydrographs of actual streams; impulse wheels and reaction turbines and the conditions governing their selection; storage and the relation of the reservoir to the power station; economics of power development, its sale and distribution.

Textbook: Mead's *Water Power Engineering*.

Prerequisite: C.E. 7, 11, and 12, and to be taken with C.E. 38.

40. SEWERAGE. Winter quarter. 3 h.

This course covers the design and construction of sewerage systems, including separate and combined systems; surveys and plans, determination of size and capacity; construction; and modern methods of sewage disposal.

Textbook: Metcalf and Eddy's *American Sewerage Practice*, Volume I, and references.

Prerequisite: C.E. 11, and to be taken with C.E. 41.

41. HYDRAULIC DESIGN. Winter quarter. Six hours in drawing room. 2 h.

Detail design of structures for water works, sewerage systems and hydraulic structures for water power and irrigation prospects.

Prerequisite: C.E. 38 and 39, and to be taken with C.E. 40.

42. IRRIGATION ENGINEERING. Spring quarter. 3 h.

In this course a study is made of the fundamental principles of irrigation engineering, including the design and construction of reservoirs, dams, flumes, canals, and other irrigation works.

Textbook: Etcheverry's Irrigation Engineering, Vols. I and III.

Prerequisite: C.E. 11, 38 and 41.

43. ESTIMATES AND COSTS. Winter quarter. 2 h.

Detail estimates are made of engineering structures of timber, concrete and steel. A study is made of methods of determining costs and of cost keeping.

Prerequisite: C.E. 22, 23, 31 and 32.

44. ENGINEERING CONTRACTS. Winter quarter. 3 h.

For senior students only.

The law of engineering contracts and specifications. Emphasis is placed on the importance of the clear and definite writing of contracts and specifications, and considerable practice is given the student in the preparation of contracts and specifications.

Textbook: Tucker's Contracts in Engineering.

45. ENGINEERING ADMINISTRATION. Spring quarter. 3 h.

A study of the economics of engineering construction, and the details of engineering organization for construction and operation. Some time is given to a study of the labor problem including the hiring and paying of men, welfare, sanitation, and safety.

Prerequisite: C.E. 44.

46. C.E. SEMINAR. Spring quarter. 1 h.

For senior students only.

A study is made of technical periodicals and literature.

ELECTRICAL ENGINEERING

PROFESSORS EVANS AND DWIGHT, ASSISTANT PROFESSOR JENKINS, AND
MR. McCORMICK, AND MR. THORPE:

1. ELECTRICAL MACHINERY. Autumn quarter. 3 h.

A study of the electric and magnetic circuits of direct current machines and apparatus, with especial emphasis on the

mathematical and graphical development of the principles involved in their theory and operation. The work is supplemented by practical problems throughout the course.

Textbook: Franklin and Estey's Elements of Electrical Engineering, Vols. I and II.

Prerequisite: E.E. 30, and to be taken with Eng. Phys. 53, 54 and 55.

2. ELECTRICAL MACHINERY. Winter quarter. 3 h.

A continuation of the study of direct current machines and the study of simple alternating current circuits and the operation characteristics of alternating current machinery. Methods of measurement of alternating current are also taken up.

Prerequisite: E.E. 1.

3. ELECTRICAL MACHINERY. Spring quarter. 3 h.

A continuation of the study of alternating current machinery.

Prerequisite: E.E. 2, and to be taken with E.E. 33.

4. THEORY OF ALTERNATING CURRENTS. Autumn quarter. 3 h.

A study of the theory, regulation, and operation of the various types of alternating current apparatus—single-phase and polyphase generators, synchronous and induction motors, rotary converters, transformers, etc.; the solution of alternating current circuits; the use of vectors and the complex quantity.

Textbook: Lawrence's Principles of Alternating Current Machinery, and references.

Prerequisite: E.E. 3, and Eng. Phys. 53.

5. THEORY OF ALTERNATING CURRENTS. Winter quarter. 3 h.

A continuation of E.E. 4.

Prerequisite: E.E. 4.

6. THEORY OF ALTERNATING CURRENTS. Spring quarter. 3 h.

A continuation of E.E. 5.

Prerequisite: E.E. 5.

7. TELEPHONE ENGINEERING. Autumn quarter. 3 h.

A study of the electrical principles underlying the transmission of speech, the construction and operation of different

types of subscribers' station and central office equipment, underground and aerial lines, automatic and wireless systems, telephone and telegraph engineering problems.

Textbook: McMeen and Miller's Telephony, notes and references.

Prerequisite: E.E. 3 and E.E. 33.

8. TRANSMISSION AND DISTRIBUTION. Winter quarter. 2 h.

A study of the principles of direct and alternating current distribution for light and power purposes, methods of installation and regulation, illustrated by practical application to specific problems, alternating current problems in long distance transmission.

Textbook: Dwight's Transmission Line Formulas and Lundquist's Transmission Line Construction, notes and references.

Prerequisite: E.E. 4 and E.E. 34.

9. TRANSMISSION AND DISTRIBUTION. Spring quarter. 2 h.

A continuation of E.E. 8.

Prerequisite: E.E. 8.

10. ILLUMINATION AND PHOTOMETRY. Autumn quarter. 3 h.

A study of illuminants with respect to their adaptation to interior and exterior lighting and methods of determining the amount, character, and distribution of their light flux, together with the engineering and economic principles of illumination.

Textbook: Wickenden's Illumination and Photometry, notes and references.

Prerequisite: To be taken with E.E. 1.

11. ELECTRIC AND MAGNETIC CIRCUITS. Autumn quarter. 2 h.

This course is a very elementary course offered to beginning students to introduce fundamental laws and principles as early as possible. It is largely a problem course familiarizing the student with the laws and principles by drill in concrete examples.

Textbook: Notes and references.

Prerequisite: To be taken with Eng. Phys. 50 and 51 and Eng. Math. 4a.

12. **ELECTRIC AND MAGNETIC CIRCUITS.** Winter quarter. 2 h.

A continuation of E.E. 11.

Prerequisite: E.E. 11 and to be taken with Eng. Phys. 50 and 51, and Eng. Math. 4b.

13. **ELECTRICAL MACHINERY.** Winter quarter. 3 h.

A course, arranged for students who are not specializing in electrical engineering, covering the laws and properties of electric and magnetic circuits; the theory, construction, and operation of direct current machines and apparatus; the solution of practical problems.

Textbook: Gray's Principles and Practice of Electrical Engineering.

Prerequisite: C.E. 7, and Eng. Math. 3.

14. **ELECTRICAL MACHINERY.** Spring quarter. 4 h.

A continuation of Course 13, including also a study of the simpler principles of alternating currents and alternating current machinery.

Prerequisite: E.E. 13.

15. **PRIMARY AND SECONDARY BATTERIES.** 1 h. Elective.

A course devoted primarily to the study of storage batteries, their use, maintenance, and care, and their application to central station work and power distribution.

Prerequisite: E.E. 2 or 13.

16. **E.E. SEMINAR.** Spring quarter. 1 h.

For senior students only.

A course in the history of electrical engineering and the biography of prominent engineers; also reviews of current electrical literature.

17. **ENGINEERING MATERIALS.** Autumn quarter. 3 h.

A study is made of the properties of materials used in engineering construction, the effects of different methods of manufacture upon the quality of material, and specifications and standard tests for materials.

Textbook: Mill's Materials of Engineering and notes.

Prerequisite: Eng. Math. 3, and to be taken with Eng. Phys. 50 and 51.

18. ORGANIZATION AND MANAGEMENT. Autumn quarter. 3 h.

Lectures and assigned reading.

A course dealing with engineering as a business problem, showing the importance of the dollar as a factor in engineering decisions. Fundamental principles studied as to costs, handling of labor and materials, producing a working organization, and the engineer in the appraisal of public utilities for rate making, taxation, issue of securities and sale.

Textbook: Notes and references.

Prerequisite: E.E. 3, and to be taken with E.E. 4.

19. TELEPHONE ENGINEERING (ADVANCED). 3 h. Elective.

A course covering the various types of telephone lines and switchboards, methods of testing lines and cables, traffic problems, economics of telephone engineering.

Prerequisite: E.E. 7.

20. ILLUMINATION AND PHOTOMETRY (ADVANCED). 3 h. Elective.

The calculation of light flux and illumination. The design and comparison of illuminating systems. Practical tests of existing installations.

Prerequisite: E.E. 10.

21. ELECTRIC RAILWAY ENGINEERING. Autumn quarter. 2 h.

A detailed study of the principles of design and installation of electric railway systems, storage battery installations, distribution systems; surface, overhead and underground railways. Principles and operation of various systems of train control, manual and automatic block signals and interlocking systems. Both direct and alternating current systems are covered. Some time is also given to the electrification of railroad terminals.

Prerequisite: E.E. 3, and to be taken with E.E. 4.

Textbook: Harding's Electric Railway Engineering, notes and references.

22. ELECTRIC RAILWAY ENGINEERING. Winter quarter. 2 h.

A continuation of E.E. 21.

Prerequisite: E.E. 21.

23. ELECTRIC RAILWAY ENGINEERING. Spring quarter. 2 h.

A continuation of E.E. 22.

Prerequisite: E.E. 22.

24. RAILWAY SIGNALING. 2 h. Elective.

A course covering the development and present-day practice in signaling, dispatching, and interlocking with some special applications.

Prerequisite: E.E. 21 and 22, or may be taken with E.E. 22.

30. ELECTRIC AND MAGNETIC CIRCUITS. Spring quarter. Three hours in laboratory. 1 h.

A study of the circuits of various types of apparatus and laboratory installations. This course is to prepare the student for the laboratory work which follows.

Prerequisite: E.E. 11 and E.E. 12.

31. DIRECT CURRENT LABORATORY. Autumn quarter. Six hours in laboratory. 2 h.

Experimental study of the characteristics of direct current generators and motors, methods of testing, commercial tests, etc.

Textbook: Wilson's Dynamo Laboratory Outlines; notes and references.

Prerequisite: E.E. 30, and to be taken with E.E. 1 and Eng. Phys. 54 and 55.

32. PHOTOMETRY LABORATORY. Winter quarter. Six hours in laboratory. 2 h.

A laboratory course in the determination of the strength and distribution of light of various types of illuminants, practice in the use of different photometers, measurement and representation of illumination.

Prerequisite: E.E. 10 and E.E. 31.

33. DIRECT CURRENT LABORATORY. Spring quarter. Six hours in laboratory. 2 h.

Continuation of E.E. 31.

Prerequisite: E.E. 31, and to be taken with E.E. 3.

34. ALTERNATING CURRENT LABORATORY. Autumn quarter. Six hours in laboratory. 2 h.

Experimental study of the properties and performance of alternating current generators, motors, transformers, rotary

converters, methods of alternating current measurements and commercial tests, including complete operation tests.

Textbook: Wilson's Dynamo Laboratory Outlines; notes and references.

Prerequisite: E.E. 3 and E.E. 33, and to be taken with E.E. 4.

35. ALTERNATING CURRENT LABORATORY. Winter quarter. Six hours in laboratory. 2 h.

Continuation of E.E. 34 with some high tension tests.

Prerequisite: E.E. 34 and to be taken with E.E. 5 and 8.

36. EXPERIMENTAL ELECTRICAL ENGINEERING. Spring quarter. One hour lecture, six hours in laboratory. 3 h.

Special tests in line with current electrical engineering problems such as insulation tests and high tension phenomena. Some time is also given to the work of the Standardization Laboratory and such special pieces of apparatus as the oscillograph and the artificial transmission line. Original effort on the part of the student is encouraged in the preparation of problems, manner of handling experiments, and in the interpretation of results.

Prerequisite: E.E. 5, 8 and 35.

37. E. E. LABORATORY. Spring quarter. Three hours in laboratory. 1 h.

A laboratory course in the testing and operation of direct and alternating current machinery, arranged for students not specializing in electrical engineering.

Textbook: Wilson's Dynamo Laboratory Outlines; notes and references.

Prerequisite: E.E. 13 and to be taken with E.E. 14.

40. CENTRAL STATION DESIGN. Autumn quarter. One hour lecture, three hours in drawing room. 2 h.

Lectures, problems, drawings.

Principles of design of direct and alternating current apparatus. The location and design of electric power plants and

substations for public service. Complete drawings and details of cost and construction required.

Textbook: Still's Principles of Electrical Design; notes and references.

Prerequisite: M.E. 7 and to be taken with E.E. 4 and 34.

41. CENTRAL STATION DESIGN. Winter quarter. Nine hours in drawing room. 3 h.

Continuation of E.E. 40.

Prerequisite: E.E. 40 and to be taken with E.E. 8 and 35.

42. CENTRAL STATION DESIGN. Spring quarter. Six hours in drawing room. 2 h.

Continuation of E.E. 41.

Prerequisite: E.E. 41.

43. CENTRAL STATION DESIGN (ADVANCED). Six hours in drawing room. 2 h. Elective.

A continuation of E.E. 42, taking up the construction and operation of hydro-electric and gas electric power plants. Complete drawings and details of costs and construction required.

Prerequisite: E.E. 42.

MECHANICAL ENGINEERING

PROFESSORS HUNTER AND BLACK, ASSISTANT PROFESSORS BAUER, MALORY AND SIMMERING, AND MR. BEATTIE, AND MR. SEARS:

1. KINEMATICS. Any quarter. 3 h.

A study of the relative motions of machine parts, instant centers, straight line motion, cams, gearing, belting and intermittent motions.

Textbook: Keown's Mechanism.

Prerequisite: Eng. Math. 1 and 2, and to be taken with Eng. Phys. 50 and 51.

2. ENGINEERING MATERIALS. Autumn quarter. 4 h.

This course is a study of the manufacture, properties and selection of the materials used in engineering construction.

Textbook: Mill's Materials of Construction.

Prerequisite: Eng. Math. 3, and to be taken with Eng. Phys. 50 and 51.

3. **ENGINEERING MATERIALS.** Autumn quarter. 2 h.

A course similar to M.E. 2, however, covering the subject more briefly.

Textbook: Moore's Materials of Engineering.

Prerequisite: Eng. Math. 3, and to be taken with Eng. Phys. 50 and 51.

4. **HEAT TREATMENT OF STEEL.** Winter or spring quarter. 3 h.

A study of the theory of hardening, tempering, annealing, toughening, case hardening and the application of modern processes to the heat treatment of steel.

Textbook: Bullen's Steel and Its Heat Treatment.

Prerequisite: M.E. 2 or 3.

5. **STEAM ENGINES AND BOILERS.** Any quarter. 3 h.

This course includes an elementary study of thermodynamics, various types of steam boilers and engines, valve gears, and other power plant apparatus.

Textbook: Allen and Bursley's Heat Engines.

Prerequisite: Eng. Phys. 50 and 51.

6. **THERMODYNAMICS.** Winter quarter. 2 h.

The fundamental principles of thermodynamics are studied, including fundamental laws, laws of perfect gases; gas and vapor cycles; laws of vapors.

Textbook: Ennis' Applied Thermodynamics for Engineers.

Prerequisite: M.E. 5; Eng. Math. 4 and Eng. Phys. 50 and 51.

7. **THERMODYNAMICS.** Spring quarter. 3 h.

A continuation of M.E. 6, including the applications of the principles of thermodynamics to heat power engineering.

Textbook: Ennis' Applied Thermodynamics for Engineers.

Prerequisite: M.E. 6.

8. **THERMODYNAMICS.** Winter quarter. 4 h.

This course is primarily for mechanical engineering students and consists of a detailed study of the principles of thermodynamics and the practical applications to heat power engineering.

Textbook: Ennis' Applied Thermodynamics for Engineers.

Prerequisite: M.E. 5; Eng. Math. 4, and Eng. Phys. 50 and 51.

9. THERMODYNAMICS. Spring quarter. 3 h.

A continuation of M.E. 8.

Textbook: Ennis' Applied Thermodynamics for Engineers.

Prerequisite: M.E. 8.

10. HEATING AND VENTILATION. Spring quarter. 3 h.

This course includes a study of the principles of heating and ventilation; also a study of the warm air, hot water, vapor and steam systems of heating and mechanical systems of ventilation. Each student is required to design a heating and ventilating system for a given building, including complete specifications.

Textbook: Green's Heating and Ventilation of Buildings.

Prerequisite: M.E. 6 and 7, or M.E. 8 and 9.

11. LOCOMOTIVES AND AIR BRAKES. Winter quarter. 3 h.

The mechanics of the locomotive and problems relating to its operation; the engine and valve mechanism, train resistance, rail pressure, slipping, braking, hauling capacity and steam consumption are each discussed with problems.

Textbooks: Henderson's Operations, and McShane's Locomotive, Up to Date.

Prerequisite: M.E. 5 and 31.

12. AUTOMOBILES AND GAS ENGINES. Autumn quarter. 3 h.

This course covers the construction and operation of automobiles, gas engines and producer gas plants.

Textbooks: Hobbs and Elliott's The Gasoline Automobile, and Streeter's Internal Combustion Engines.

Prerequisite: M.E. 8 and 9.

13. HYDRAULIC MACHINERY. Winter quarter. 2 h.

This course covers the application of the principles of the dynamics of fluids to the various turbines and other water wheels, hydraulic presses, lifts and cranes.

Textbook: Blaine's Hydraulic Machinery.

Prerequisite: C.E. 11 and M.E. 5.

14. WORKS MANAGEMENT. Autumn quarter. 3 h.

This course covers the economical designs and management of manufacturing property, the capitalization and organi-

zation of companies, the organization of labor, the calculation of cost, transmission of power, and sanitation.

Textbook: Ennis' Works Management.

Prerequisite: M.E. 5.

15. VALVE GEARS. Winter quarter. 2 h.

This course covers a theoretical and practical study of valve gears and link motions.

Textbook: Fessenden's Valve Gears.

Prerequisite: M.E. 5.

16. PRINCIPLES OF AVIATION. Autumn quarter. 2 h.

A study of the history, types and nomenclature of the aeroplane, with particular reference to air resistance, principles of flight, materials of construction, rigging of aeroplanes, propellers and engines.

Textbook: Colvin's Aircraft Mechanics Handbook.

Prerequisite: M.E. 8 and 9, and to be taken with M.E. 12.

17. STEAM TURBINES. Spring quarter. 2 h.

A study of the design and operation of steam turbines covering the comparison of types, flow of steam and its action on turbine vanes, design of vanes for maximum efficiency, theory of single and multistage turbines, turbine performance, and condensing apparatus.

Textbook: Moyer's Steam Turbines.

Prerequisite: M.E. 8 and 9, or M.E. 6 and 7.

18. COMPRESSED AIR. Autumn quarter. 2 h.

A study of air compressors, the transmission of compressed air and its application to pneumatic machinery.

Textbook: Peele's Compressed Air Plant.

Prerequisite: M.E. 8 and 9.

19. REFRIGERATION. Winter quarter. 3 h.

The principles of the compression and absorption systems of refrigeration and also the application of mechanical refrigeration to ice making, cold storage, etc.

Textbook: MacIntire's Mechanical Refrigeration.

Prerequisite: M.E. 8 and 9.

20. RAILWAY OPERATION AND SIGNALS. Spring quarter. 2 h.

This course covers the operation of trains, handling of freight, and the construction, operation and maintenance of railway signals.

Prerequisite: M.E. 11.

21. M. E. SEMINAR. Winter quarter. 1 h.

For senior students only.

A study and discussion of technical periodicals and engineering literature.

22. M. E. SEMINAR. Spring quarter. 1 h.

A continuation of M.E. 21.

23. MECHANICS OF MACHINERY. Spring quarter. 3 h.

This course covers the application of the principles of theoretical and applied mechanics to such problems in machine design, as transmission of power by belting, ropes, and chains, dynamometers, friction in machine parts, and useful applications of friction to clutches and brakes; efficiency of machines; high speed shafting and balancing.

Textbook: Leutwiler's Machine Design.

Prerequisite: M.E. 42.

24. POWER PLANT EFFICIENCY. Spring quarter. 2 h.

This course takes up the study of fuels, their selection and treatment, combustion, methods of firing, smoke prevention, heat absorption, boiler efficiency, boiler plant management and operation.

Prerequisite: M.E. 5 and 7.

25. CHEMICAL ENGINEERING SEMINAR. Autumn quarter. 1 h.

A course in engineering literature making use of the technical periodicals and articles published by chemists and engineers.

Prerequisite: M.E. 7.

26. CHEMICAL ENGINEERING MATERIALS. Winter quarter. 2 h.

This course is offered to chemical engineering students only after they have had the major part of their chemistry. It takes up the study of abrasion materials, polishing materials, oils and greases, paints, varnishes, leather and other materials not given in course 3.

Prerequisite: M.E. 24 and 25.

30. M. E. LABORATORY. Any quarter. Six hours in laboratory. 2 h.

Experimental work in calibration of planimeters, water meters and gages; tests of dryness and quality of steam; tests of acidity, specific gravity, chilling and flashing points, and viscosity of oils and other lubricating materials; of impurities in boiler feed water; calometric analysis of solid, liquid, and gaseous fuels.

Textbook: Carpenter and Diederich's Experimental Engineering is used as a reference.

Prerequisite: M.E. 5, and to be taken with M.E. 6.

31. STEAM ENGINE LABORATORY. Autumn quarter. Six hours in laboratory. 2 h.

The laboratory work includes, the calibration of steam engine indicators; a study of indicator cards; tests of simple engines; boiler tests; flue gas analysis; tests of injectors and boiler feed pumps; tests of internal combustion engines.

Prerequisite: M.E. 9 and 30.

32. STEAM ENGINE LABORATORY. Autumn quarter. Nine hours in the laboratory. 3 h.

Similar in character to M.E. 31 but more extensive, including a complete test of a steam-electric power plant.

Prerequisite: M.E. 7 and 30.

33. STEAM ENGINE LABORATORY. Winter quarter. Nine hours in the laboratory. 3 h.

Advanced work in engine testing; application of Clayton's analysis to steam engine performance; advanced work in boiler performance; tests of heating boilers and of power plants; tests on fans, blowers, compressors and flow of air in pipes.

Prerequisite: M.E. 31.

40. MACHINE DRAWING. Any quarter. Two hours lecture, nine hours in drawing room. 5 h.

A study of machine elements, such as bolts, rivets, screws, keys, couplings and gears. Problems are given requiring simple calculations for strength, including sketching and working drawings.

Textbook: Leutwiler's Machine Design, supplemented by notes.

Prerequisite: M.E. 1 and M.E. 2, or M.E. 3, or E.E. 17.

41. MACHINE DESIGN. Autumn quarter. Two hours lecture, nine hours in drawing room. 5 h.

This course covers advanced problems in kinematics, the design of belting, shafting, bearings and pulleys, and the design of a toggle press, including a set of working drawings and bill of materials.

Textbook: Leutwiler's Machine Design.

Prerequisite: M.E. 2 and 40, C.E. 6, and to be taken with C.E. 8.

42. MACHINE DESIGN. Winter quarter. One hour lecture, and nine hours in drawing room. 4 h.

A continuation of M.E. 41.

Prerequisite: M.E. 41.

44. MACHINE DESIGN. Winter or spring quarter. One hour lecture, six hours in drawing room. 3 h.

This course is similar to M.E. 41 and is arranged for students in electrical and chemical engineering.

Textbook: Leutwiler's Machine Design.

Prerequisite: E.E. 17, Eng. Phys. 52 and 53 or C.E. 7, and to be taken with C.E. 8; M.E. 1 and 2, M.E. 40.

45. STEAM ENGINE AND BOILER DESIGN. Autumn quarter. One hour lecture, six hours in drawing room. 3 h.

This course covers the design of simple and compound steam engines and of fire and water tube boilers.

Prerequisite: M.E. 9, 15, 42.

46. STEAM ENGINE AND BOILER DESIGN. Winter quarter. One hour lecture, six hours in drawing room. 3 h.

A continuation of M.E. 45.

Prerequisite: M.E. 45.

47. POWER PLANT DESIGN. Spring quarter. Two hours lecture, nine hours in drawing room. 5 h.

Each student is required to make a design, with estimate and specifications, of a steam-electric power plant to operate most economically on a given load curve.

Textbook: Gebhardt's Steam Power Plant Engineering and Fernald and Orrok's Engineering of Power Plants.

Prerequisite: M.E. 46.

48. **CHEMICAL ENGINEERING DESIGN.** Winter quarter. One hour lecture, six hours in drawing room. 3 h.

A course in the mechanical analysis and design of special classes of machinery and layouts used in chemical processes, such as pumping machinery and piping, crushers and conveyors, presses, condensers, and power apparatus.

Prerequisite: M.E. 7, M.E. 44.

SHOP WORK

1. **WOOD WORKING.** Autumn or winter quarter. Six hours in shop. 2 h.

The use of all ordinary woodworking tools in a series of gradual exercises, including the use of speed lathe and turning tools.

2. **PATTERN MAKING.** Winter quarter. Three hours in shop. 1 h.

Making patterns for iron and brass castings with allowance for draft, shrinkage and finish.

Prerequisite: Shop Work 1.

3. **FORGING.** Spring quarter. One hour lecture, six hours in shop. 3 h.

Practical work in the forging and welding of iron and steel, tool dressing, tempering, case hardening and annealing. This course is designed to familiarize the student with the properties and structure of the different irons and steels.

Prerequisite: M.E. 2 and 4.

4. **FORGING.** Autumn quarter. Six hours in shop. 2 h.

This course is similar to Shop Work 2 and made to accommodate electrical engineering students.

Prerequisite: To be taken with E.E. 17.

5. **FOUNDRY.** Spring quarter. One hour lecture, six hours in shop. 3 h.

Practical work in the making of moulds and cores; the care and operation of the cupola furnace and the brass furnace; mixing of metals; and the study of the properties of alloys.

Prerequisite: M.E. 2 or 3.

6. **FOUNDRY.** Winter quarter. Six hours in shop. 2 h.

This course is similar to Shop Work 4 and made to accommodate electrical engineering students.

Prerequisite: E.E. 17 or M.E. 2.

7. **MACHINE SHOP.** Winter quarter. One hour lecture, six hours in shop. 3 h.

Practical work in the machining of the different grades of iron, steel, bronze, and other metals by means of the lathe, planer, milling machine, and drill press. New machines and machine parts are constructed.

Prerequisite: M.E. 1 and 2, and Shop 3.

8. **MACHINE SHOP.** Spring quarter. Six hours in shop. 2 h.

A continuation of Shop Work 5, taking up grinding, lapping, tool making, and construction of helical gears.

Prerequisite: Shop Work 7.

9. **MACHINE SHOP.** Autumn quarter. Six hours in shop. 2 h.

This course is similar to Shop Work 5 and made to accommodate electrical engineering students.

Prerequisite: To be taken with E.E. 17.

10. **GENERAL SHOP WORK.** Spring quarter. Three hours in shop. 1 h.

This course is to give the chemical engineering student a general idea of the processes and tools used in the wood shop, forge shop, machine shop, and foundry.

Prerequisite: M.E. 3.

ENGINEERING MATHEMATICS

PROFESSOR SPERRY, MR. McGRATH, MR. HUTCHINSON, MR. STRAUSS,
AND MR. DUNGAN:

- 1a. **ALGEBRA.** Any quarter. 3 h.

A one-quarter course through the quadratic equation and linear systems of simultaneous equations. Logarithms, functions and their graphical representation are included.

Textbook: Skinner's College Algebra.

Prerequisite: High School Algebra through quadratics; plane and solid geometry.

1b. ALGEBRA. Any quarter. 3 h.

A one-quarter course in continuation of Eng. Math. 1a, including inequalities, complex numbers, theory of equations, the compound interest law and probability.

Textbook: Skinner's College Algebra.

Prerequisite: Eng. Math. 1a and 2a.

2a. TRIGONOMETRY. Any quarter. 2 h.

A one-quarter course through the functions of the sum of two angles and including the fundamental relations and the right triangle.

Textbook: Bauer and Brooke's Plane and Spherical Trigonometry.

Prerequisite: Same as for Eng. Math. 1a.

2b. TRIGONOMETRY. Any quarter. 2 h.

A one-quarter course in continuation of Eng. Math. 2a through the right spherical triangle and the fundamental formulas for the oblique spherical triangle.

Textbook: Bauer and Brooke's Plane and Spherical Trigonometry.

Prerequisite: Eng. Math. 1a and 2a.

3. ANALYTIC GEOMETRY. Any quarter. 5 h.

A one-quarter course including transcendental functions, tangents, and the quadric surfaces. A number of graphs and constructions drawn according to exact directions are required.

Textbook: Wilson and Tracey's Analytic Geometry.

Prerequisite: Eng. Math. 1b and 2b.

4a. CALCULUS. Any quarter. 4 h.

A one-quarter course in fundamental differentiation with applications not including series and partial differentiation.

Textbook: Phillips' Differential and Integral Calculus.

Prerequisite: Eng. Math. 3.

4b. CALCULUS. Any quarter. 4 h.

A one-quarter course in continuation of Eng. Math. 4a covering series, partial differentiation, and elementary integration.

Textbook: Phillips' Differential and Integral Calculus.

Prerequisite: Eng. Math. 4a.

4c. CALCULUS. Any quarter. 4 h.

A one-quarter course in continuation of Eng. Math. 4b covering integration with applications to pressures, centers of gravity, and moments of inertia, and elementary differential equations.

Textbook: Phillips' Differential and Integral Calculus.

Prerequisite: Eng. Math. 4b.

5. DIFFERENTIAL EQUATIONS. Spring quarter. Elective. 5 h.

A one-quarter course in ordinary differential equations with engineering and physical applications. Hyperbolic functions are included.

Textbook: Murray's Differential Equations.

Prerequisite: Eng. Math. 4c.

6. GEODESY AND LEAST SQUARES. Spring quarter. 3 h.

A one-quarter course in the determination of the geodetic positions, the figure of the earth, the theory of least squares and its application to triangulation, leveling, and base line measurement.

Textbook: Ingram's Geodetic Surveying.

Prerequisite: Eng. Math. 4c, C.E. 2, and Eng. Phys. 60.

7. MATHEMATICAL THEORY OF HEAT CONDUCTION. Autumn quarter. Elective. 4 h.

A one-quarter course in Fourier's series and integral with applications to problems in the flow of heat.

Textbook: Ingersoll and Jobell's Mathematical Theory of Heat Conduction.

Prerequisite: Eng. Math. 5.

8. THEORY OF MEASUREMENTS. Winter quarter. Elective. 4 h.

A one-quarter course in the theory of least squares and the precision of measurements with applications to experimental laboratory work.

Textbook: Weld's Theory of Least Squares.

Prerequisite: Eng. Math. 4c.

GENERAL ENGINEERING DRAWING

ASSISTANT PROFESSOR ALLEN AND MR. BRUBAKER:

1. MECHANICAL DRAWING. Autumn or winter quarter. One hour lecture and nine hours in drawing room. 4 h.

Use of drawing instruments, lettering, linear perspective, machine sketching, principles of isometric, cabinet and orthographic projections, making of working drawings, tracing and blue printing.

Textbook: French's Engineering Drawing.

2. MECHANICAL DRAWING. Winter or spring quarter. One hour lecture, and nine hours in drawing room. 4 h.

Continuation of Draw. 1.

Prerequisite: Draw. 1.

3. DESCRIPTIVE GEOMETRY. Winter or spring quarter. Two hours lecture and six hours in drawing room. 4 h.

The course covers the orthographic projection of points, lines, planes, curved surfaces, etc., in the four angles of projection, intersections and developments of surfaces. In order to fix the principles, many geometric problems are solved, also a large number of practical applications are worked out.

Textbook: Smith's Practical Descriptive Geometry, second edition.

Prerequisite: Draw. 1 and 2, and solid geometry.

ENGINEERING ENGLISH

ASSISTANT PROFESSOR McDONALD, MISS HUTSINPILLAR, AND
MR. TIPPETT:

1. RHETORIC. Autumn or winter quarter. 3 h.

A course in composition arranged with special reference to engineering students.

2. RHETORIC. Winter or spring quarter. 3 h.

A continuation of Eng. English 1.

3. RHETORIC. Autumn or spring quarter. 3 h.

A continuation of Eng. English 2.

4. **ENGINEERING LITERATURE.** Winter or spring quarter. 2 h.

In this course the student reads and analyzes selections from the best writings in pure science and in engineering. The student is shown the value of clear, concise and accurate diction.

Supplementary Reading. In addition to the reading in this course the student is required to do a prescribed amount of reading during the sophomore and junior years. The list of required books is printed in a supplementary pamphlet.

Prerequisite: Eng. English 1.

5. **TECHNICAL WRITING.** Autumn or winter quarter. 2 h.

This is an advanced course in composition with particular reference to the needs of the individual student. Particular attention is given to the preparation of engineering reports and to technical journalism.

Prerequisite: English 3, and junior standing in the College of Engineering.

ENGINEERING PHYSICS

PROFESSORS LESTER AND WOODROW, ASSISTANT PROFESSOR RANDOLPH,
AND MR. MACCOLL:

50. **GENERAL PHYSICS.** Three quarters. Lectures two hours. Recitations two hours. 4 h.

Prerequisite: Elementary Physics and Eng. Math. 2.

51. **EXPERIMENTAL PHYSICS.** Three quarters. One three-hour period. 1 h.

Prerequisite: Elementary Physics and Eng. Math. 2.

Eng. Phys. 50 is an elementary but thorough presentation of the fundamental facts, principles and applications of modern physics. The lectures are fully illustrated by apparatus and by experiments. The recitations are based upon both the lectures and a textbook which is studied systematically in parallel with the lectures.

It is strongly recommended that Course 51 be taken in parallel with Course 50. When not so taken Course 50 or its equivalent must precede.

The above courses or their equivalent are prerequisite to all other courses in physics.

52. ANALYTICAL MECHANICS—STATICS. Spring quarter. 3 h.

A study of the conditions of equilibrium of particles and rigid bodies, with some attention also to centers of mass and moments of inertia.

Prerequisite: Eng. Phys. 50 and Eng. Math. 4a and 4b, and to be taken with 4c.

53. ANALYTICAL MECHANICS—DYNAMICS. Autumn quarter. 3 h.

A study of the motions of particles and rigid bodies. Emphasis is laid upon the fundamental physical principles of the subject and an attempt is made to give the student a certain facility in translating physical conceptions into mathematical symbols and mathematical formulæ into physical ideas.

Prerequisite: Eng. Phys. 52, Eng. Math. 4c.

54a. THEORY OF ELECTRICITY AND MAGNETISM. Autumn quarter. 2 h.

The elements of the mathematical theory of electricity and magnetism with applications to the general theory of instruments of fundamental importance in electrical measurements.

Prerequisite: Eng. Phys. 50, 52, and Eng. Math. 4c, and to be taken with Eng. Phys. 53.

54b. THEORY OF ELECTRICITY AND MAGNETISM. Winter quarter. 3 h.

A continuation of Eng. Phys. 54a.

55. ELECTRICAL MEASUREMENTS I. Autumn quarter. Three three-hour periods. 3 h.

A laboratory course intended to accompany and to supplement Eng. Phys. 54.

Prerequisite: Eng. Phys. 50, 51 and Eng. Math. 4c.

56. ELECTRICAL MEASUREMENTS II. Winter quarter. Elective. One hour lecture and six hours in laboratory. 3 h.

This course deals with selected electrical problems of considerable difficulty requiring a rather advanced knowledge of the theory of electricity and magnetism.

Prerequisite: Eng. Phys. 54, and 55.

57. **ELECTRIC WAVES AND RADIO-COMMUNICATION.** Autumn quarter. Elective. 3 h.

A study of electromagnetic waves and the theory of radio-communication involving at least a fair knowledge of electricity and magnetism.

Prerequisite: Eng. Phys. 54, and some knowledge of Alternating Current theory.

58. **WIRELESS TELEGRAPHY AND TELEPHONY.** Winter quarter. Elective. 3 h.

A course dealing with practical methods and with the theory and functions of the various apparatus employed.

Prerequisite: Eng. Phys. 57.

59. **ELECTRICAL MEASUREMENTS III.** Spring quarter. Elective. Six hours in laboratory. 2 h.

A course in electrical measurements at radio frequencies, intended primarily to supplement Eng. Physics 58.

60. **PRACTICAL ASTRONOMY.** Winter quarter. 2 h.

A course especially adapted to the needs of civil engineering students who can devote but little time to the subject.

Prerequisite: Eng. Math. 2 and C.E. 1.

Other courses in the College of Liberal Arts may be found on page 104, and those in the graduate school on page 209.

ENGINEERING CHEMISTRY

PROFESSOR EKELEY, ASSISTANT PROFESSOR DEAN, AND MR. VANVALKENBURGH, MR. CORNELL AND MR. LOOMIS:

1. **GENERAL CHEMISTRY LECTURES.** Three quarters. 3 h.

A course of lectures dealing with the laws and theories of chemistry, together with a study of the elements and their most important compounds.

2. **GENERAL CHEMISTRY LABORATORY.** Three quarters. One three-hour period. 1 h.

A laboratory course designed to accompany Eng. Chem. 1.

3. **QUALITATIVE ANALYSIS.** Three quarters. One hour lecture and six hours in laboratory. 3 h.

A course in the separation and identification of the more common bases and acids. The lectures deal with the chemistry of the analytical reactions, special emphasis being given to the application of mass-action, ion-product, etc.

Prerequisite: Eng. Chem. 1 and 2.

4. **QUANTITATIVE ANALYSIS.** Three quarters. One hour lecture and nine hours in laboratory. 4 h.

Elementary gravimetric and volumetric analysis, chemical calculations, etc.

Prerequisite: Eng. Chem. 3, or to be taken with Eng. Chem. 3.

5. **ORGANIC CHEMISTRY LECTURES.** Three quarters. 3 h.

A study of the methods of preparation and the properties of the more important organic compounds. Special stress is laid upon the theories underlying the subject and the proofs of the constitution of most of the substances studied.

Prerequisite: Eng. Chem. 3 and 4.

6. **ORGANIC PREPARATIONS.** Spring quarter. Nine hours in laboratory. 3 h.

A laboratory course in the preparation of typical aliphatic and aromatic compounds.

Prerequisite: To be taken with Eng. Chem. 5.

7. **PHYSICAL CHEMISTRY LECTURES.** Three quarters. 3 h.

A lecture course presenting the conceptions of the modern physico-chemical theories concerning the states of aggregation of matter, solutions, thermo-chemistry, equilibria, chemical kinetics, electro-chemistry, and actino-chemistry.

Prerequisite: Eng. Chem. 5 and 6.

8. **PHYSICAL CHEMISTRY LABORATORY.** Winter and spring quarters. Six hours in laboratory. 2 h.

A laboratory course supplementing Eng. Chem. 7, consisting of the determinations of densities, molecular weights, thermo-

chemical and optical constants, conductivity of solutions, electromotive force, transference numbers, viscosity, surface tension, electrochemical equivalents, transition points, etc.

9. CHEMISTRY OF MATERIALS. Winter quarter. One three-hour period. 1 h.

A laboratory course designed to accompany M.E. 26.

10. CHEMISTRY OF MATERIALS. Spring quarter. Six hours in laboratory. 2 h.

A continuation of Eng. Chem. 9.

11. INDUSTRIAL CHEMISTRY. Spring quarter. 4 h.

A lecture course on the principal chemical industries.

Prerequisite: Eng. Chem. 6 and 7.

GRADUATE SCHOOL

FACULTY*

GEORGE NORLIN, A.B., 1893, Hastings College; Ph.D., 1899, Chicago. President of the University.

J. RAYMOND BRACKETT, A.B., 1875, A.M., 1878, Bates; Ph.D., 1880, Yale. Dean; Professor of Comparative and English Literature.

IRA M. DELONG, A.B., 1878, A.M., 1881, Simpson College; LL.D., 1914, University of Denver. Professor of Mathematics.

FRED B. R. HELLEMS, A.B., 1893, Toronto; Ph.D., 1898, Chicago; LL.D., 1913, Colorado College. Professor of Latin.

CHARLES C. AYER, A.B., 1889, Harvard; Ph.D., 1896, Strasburg. Professor of Romance Languages.

FRANCIS RAMALEY, B.S., 1895, Ph.D., 1899, Minnesota. Professor of Biology.

MELANCHTHON F. LIBBY, A.B., 1890, Toronto; Ph.D., 1900, Clark. Professor of Philosophy.

JOHN BERNARD EKELEY, A.B., 1891, A.M., 1893, Colgate; Ph.D., 1902, University of Freiburg in Baden; Sc.D., 1911, Colgate. Professor of Chemistry.

RUSSELL D. GEORGE, A.B., 1897, A.M., 1898, McMaster. Professor of Geology.

JOHN D. FLEMING, A.B., 1875, Central University; LL.B., 1879, Louisville; LL.D., 1910, Central University. Charles Inglis Thomson Professor of Law.

†MILO S. KETCHUM, B.S., 1895, C.E., 1900, Illinois. Professor of Civil Engineering.

EDWARD JACKSON, C.E., 1874, A.M., 1878, Union College; M.D., 1878, Pennsylvania; Sc.D., 1914, Union College. Professor of Ophthalmology.

HERBERT S. EVANS, B.S., 1898, E.E., 1900, Nebraska. Professor of Electrical Engineering.

* This Faculty is made up of Professors and Instructors of the various Faculties of the University who offer work in the Graduate School.

† On leave of absence, autumn quarter, 1918-1919, for war service.

JOHN A. HUNTER, B.S., 1890, M.E., 1896, Pennsylvania State College. Professor of Mechanical Engineering.

THEODORE D. A. COCKERELL, Sc.D., 1913, Colorado College. Professor of Zoology.

GEORGE M. CHADWICK. Professor of Music.

JAMES F. WILLARD, B.S., 1898, Ph.D., 1902, Pennsylvania. Professor of History.

*OLIVER C. LESTER, A.B., 1897, Central College, Missouri; A.M., 1902, Ph.D., 1904, Yale. Professor of Physics.

FRANK E. THOMPSON, A.B., 1901, Leland Stanford. Professor of Education.

ROSS C. WHITMAN, A.B., 1894, M.D., 1899, Michigan. Professor of Pathology.

JUNIUS HENDERSON, A.B., 1908, Colorado. Professor of Natural History.

JOHN S. McLUCAS, A.B., 1893, South Carolina College; A.B., 1895, A.M., 1899, Harvard. Professor of English.

GRACE VAN SWERINGEN BAUR, B.L., 1893, Cornell; Ph.D., 1904, University of Berlin. Professor of Germanic Languages.

†CLOUGH T. BURNETT, M.D., 1908, Michigan. Professor of Bacteriology.

MILO G. DERHAM, A.B., 1892, Cornell; Ph.D., 1904, Colorado. Professor of Latin.

‡LAWRENCE W. COLE, A.B., 1899, Oklahoma; A.M., 1904, Ph.D., 1910, Harvard. Professor of Psychology.

JAMES C. TODD, Ph.B., 1897, Wooster; M.D., 1900, Pennsylvania. Professor of Clinical Pathology.

‡CARBON GILLASPIE, M.D., 1905, Colorado. Professor of Anatomy.

‡HOMER C. WASHBURN, Ph.C., 1902, B.S. (Phar.), 1904, Michigan. Professor of Pharmacy.

LORAN D. OSBORN, A.B., 1892; Michigan; Ph.D., 1900, Chicago. Professor of Sociology.

FREDERICK A. BUSHEE, B.L., 1894, Dartmouth; A.M., 1898, Ph.D., 1902, Harvard. Professor of Economics and Sociology.

* On leave of absence, autumn quarter, 1918-1919, for war service.

† On leave of absence, February, 1918, to February, 1919, for war service.

‡ On leave of absence for war service.

- RALPH D. CRAWFORD, A.B., 1905, A.M., 1907, Colorado; Ph.D., 1913, Yale. Professor of Mineralogy and Petrology.
- *HARRY A. CURTIS, B.S. (Ch.E.), 1908, A.M., 1910, Colorado; Ph.D., 1914, Wisconsin. Professor of Physical Chemistry.
- *FRED G. FOLSOM, A.B., 1895, Dartmouth; LL.B., 1899, Colorado. Professor of Law.
- WILLIAM R. ARTHUR, A.B., 1899, Washburn; LL.B., 1908, Northwestern. Professor of Law.
- CHARLES N. MEADER, A.B., 1906, Colby; M.D., 1910, Harvard. Professor of Medicine.
- FRANK L. CLAPP, B.S., 1911, Lincoln College; A.M., 1912, Illinois; Ph.D., 1914, Wisconsin. Professor of School Administration.
- *ARNOLD J. LIEN, A.B., 1908, A.M., 1909, Minnesota; Ph.D., 1913, Columbia. Professor of Political Science.
- ROBERT C. LEWIS, Ph.B., 1909, Ph.D., 1912, Yale. Professor of Biochemistry.
- HERBERT S. HADLEY, A.B., 1892, Kansas; LL.B., 1894, LL.D., 1909, Northwestern; LL.D., 1910, Missouri. Professor of Law.
- †WILLIAM BLACK, M.E., 1907, Illinois. Professor of Steam and Gas Engineering.
- WHITNEY C. HUNTINGTON, B.S. (C.E.), 1910, C.E., 1912; M.S., 1913, Colorado. Professor of Civil Engineering.
- CHARLES S. SPERRY, A.B., B.S. (C.E.), 1911, C.E., 1915, Colorado. Professor of Engineering Mathematics.
- JAY W. WOODROW, A.B., 1907, Drake; A.B., 1910, Oxford; Ph.D., 1913, Yale. Professor of Physics.
- ‡HERBERT B. DWIGHT, B.S. (E.E.), 1904, E.E., 1914, Colorado. Professor of Electrical Engineering.
- EDWIN W. PATTERSON, A.B., 1909, LL.B., 1911, Missouri. Professor of Law.
- CHARLES M. GRUBER, A.B., 1911, A.M., 1912, Kansas; Ph.D., 1914, Harvard. Professor of Physiology and Pharmacology.
- IVAN E. WALLIN, B.S., 1905, Iowa; A.M., 1908, Nebraska; D.Sc., 1915, New York University. Acting Professor of Anatomy.
- ‡DAVID R. JENKINS, B.S. (E.E.), 1904, E.E., 1907, Colorado. Assistant Professor of Electrical Engineering.

* On leave of absence for war service.

† Died February 6, 1919.

‡ Resigned January 1, 1919.

- *S. ANTOINETTE BIGELOW, A.B., 1893, Wellesley; A.M., 1910, Columbia. Assistant Professor of English Literature.
- †MAX M. ELLIS, A.B., 1907, A.M., 1908, Ph.D., 1911, Indiana; Sc.D. 1914, Vincennes. Assistant Professor of Biology.
- CARL C. ECKHARDT, Ph.B., 1902, Ohio State; A.M., 1904, Michigan; Ph.D., 1908, Cornell. Assistant Professor of History.
- FRANK S. BAUER, B.S. (M.E.), 1911, Illinois; M.E., 1915, Colorado. Assistant Professor of Mechanical Engineering.
- PHILIP G. WORCESTER, A.B., 1909, A.M., 1911, Colorado. Assistant Professor of Geology.
- WILLIAM F. BAUR, Ph.B., 1893, Michigan. Assistant Professor of Germanic Languages.
- FRANK G. ALLEN, B.S. (M.E.), 1901, Illinois. Assistant Professor of Engineering Drawing.
- †IVAN C. CRAWFORD, B.S. (C.E.), 1912, C.E., 1915, Colorado. Assistant Professor of Civil Engineering.
- PAUL M. DEAN, A.B., 1908, A.M., 1911, Colorado; Ph.D., 1916, Illinois. Assistant Professor of Chemistry.
- GEORGE H. LIGHT, A.B., 1899, A.M., 1900, Princeton; Ph.D., 1916, Yale. Assistant Professor of Mathematics.
- THOMAS MAITLAND MARSHALL, B.L., 1900, Michigan; M.L., 1910, Ph.D., 1914, California. Assistant Professor of History.
- WALTER F. MALLORY, B.S. (M.E.), 1914, Colorado. Assistant Professor of Mechanical Engineering.
- OSCAR A. RANDOLPH, B.S., 1911, Missouri School of Mines; M.S., 1913, Ph.D., 1916, Illinois. Assistant Professor of Physics.
- PHILIP B. McDONALD, B.S., E.M., 1910, Michigan College of Mines. Assistant Professor of Engineering English.
- ‡SIEBELT L. SIMMERING, B.S. (M.E.), 1910, Colorado; M.S., 1913, Illinois; M.E., 1916, Colorado. Assistant Professor of Mechanical Engineering.

* On leave of absence 1918-1919.

† On leave of absence for war service.

‡ Appointed April, 1919.

LORENA UNDERHILL, Ph.B., 1909, Chicago; A.M., 1912, Colorado. Instructor in Philosophy.

JOHN W. RENNELL, Instructor in Art.

JOHN D. COOKE, A.B., 1914, A.M., 1915, Leland Stanford. Instructor in English Literature.

MARY V. MCFARLAND, A.B., 1915, Colorado. Instructor in Psychology.

RUSSELL N. LOOMIS, Ph.C., 1915, B.S. (Phar.), 1917, Colorado. Instructor in Chemistry.

BENJAMIN D. CORNELL, A.B., 1915, A.M., 1918, Colorado. Instructor in Chemistry.

GLADYS H. MATHEW, A.B., 1918, Colorado. Instructor in English Literature.

GRADUATE COMMITTEE

J. RAYMOND BRACKETT, Dean.

FRANCIS RAMALEY, Secretary.

MILO S. KETCHUM.

MILO G. DERHAM.

FREDERICK A. BUSHEE.

GENERAL STATEMENT

ADMISSION

A graduate of the University of Colorado will be admitted to the Graduate School upon application, without paying a matriculation fee. A graduate of any college or scientific school of equal rank with the University of Colorado will be admitted upon presentation of a certificate of graduation and payment of the matriculation fee of ten dollars. A student from another institution should first submit his credits to the Registrar for rating.

Only a graduate or a student who has substantially completed the requirements for the bachelor's degree will be enrolled in the Graduate School. A graduate student who elects courses exclusively of undergraduate rank will not be enrolled in the Graduate School.

Admission to the Graduate School will not be taken as equivalent to candidacy for a degree. A graduate student who wishes to become a candidate for a degree must make special application.

A major subject of study should be selected by each graduate student in conference with the Dean of the Graduate School, and the minor subjects in conference with the professor in charge of the major subject.

ADVANCED STANDING AND RESIDENCE

Credit may be given by the Graduate Committee for work done in other universities, but at least one full year of residence at the University of Colorado will be required for each higher degree. For residence requirements in Summer Quarter, see page 194. Credit will not be granted for work done *in absentia*, except to graduates of the University of Colorado who are candidates for the degree of Engineer. A year's residence means that a student is located at the University not later than the fifteenth day of October, and gives his undivided attention to academic work, completing not less than the equivalent of forty-five term hours, that is, fifteen hours of class work for each quarter.

RESIDENCE REQUIREMENTS FOR INSTRUCTORS

To satisfy the requirement of one year of residence for the degree Master of Arts, Master of Science, Master of Science in Sanitary Engineering, and degree of Engineer:

1. A graduate student who is an assistant in the University may satisfy the residence requirement in one year, provided he does not teach more than one-half the regular schedule, and further provided that he obtains graduate credit of not less than six hours each quarter and a total credit during the year of not less than twenty-seven hours.

2. An instructor on full time, or an assistant on more than half time, who is a graduate student, may satisfy the residence requirement of one year in two years, providing he obtains graduate credit of not less than three hours each quarter and a total credit during the two years of not less than twenty-seven hours.

THE DEGREE MASTER OF ARTS

APPLICATION FOR ADMISSION TO CANDIDACY.—A student who has been admitted to the Graduate School, and who wishes to become a candidate for the degree Master of Arts, should make application as soon as practicable, and in any case, not later than January 1. The application for candidacy should include a program of studies leading to the degree, a list of undergraduate studies in the same field, a statement of any original work already accomplished, and an enumeration of honors and degrees. Application blanks will be furnished at the office of the Dean of the Graduate School. An applicant's instructors make recommendations to the Graduate Committee as soon as practicable, and in any case, not later than the end of the second quarter; and the Graduate Committee, after consideration of the recommendations, decides upon the application for candidacy, as soon as may be, and in any case, not later than the first week of the third quarter.

REQUIREMENTS FOR THE MASTER OF ARTS DEGREE.—The minimum requirement for the degree Master of Arts is one full year devoted to study, equivalent to not less than forty-five term hours, that is, fifteen hours of class work for three quarters; the work on the thesis is included in the forty-five hours. Studies leading to the degree Master of Arts must be divided between two subjects, known as the major subject and the minor subject. In special cases a second minor subject is permitted. The first minor subject must consist of study equivalent to at least nine term hours and must lie in a different department from the major subject, but must be approved by the professor in charge of the major subject. A department is understood to mean such a division of studies as

is under the charge of a head professor. A thesis, which counts for not less than six nor more than twelve term hours, must be written under the direction of the professor in charge of the major subject, and be finished and submitted for his approval not later than thirty days before the time at which the degree is to be conferred. Printed or typewritten copies bound, to the number of two or more, at the discretion of the major professor, shall be placed in the University Library before the diploma is delivered. Such knowledge of ancient and modern languages as may be deemed necessary by the professor in charge of the major subject is required of a candidate. The written examination of each quarter shall be taken upon such studies as are pursued in class, and at the end of the year such additional examination upon other subjects, upon the thesis, and upon the work of previous quarters, as each instructor may require. If courses have been taken during former years, however, there shall be an examination at the end covering such courses as are not taken in the final year.

ENGINEERING DEGREES

MASTER OF SCIENCE.—A candidate for the degree Master of Science must have previously received the degree B.S. in Engineering from this University; or, if he was graduated elsewhere, he must satisfy the faculty that he possesses equivalent attainments. He must choose a major subject to occupy one-half his time from the graduate courses offered in the line in which he received his bachelor's degree. Study and residence for not less than one year and a thesis on an approved subject are required. A year's work includes forty-five hours, of which not less than nine hours should be given to the thesis. The thesis in form shall comply with the specifications adopted by the faculty of the College of Engineering for the bachelor's thesis. Two bound copies of the thesis shall be deposited with the University Library before the diploma is conferred. The committee in charge of the work of each candidate shall consist of the major professor and the heads of the departments of Civil, Electrical and Mechanical Engineering.

MASTER OF SCIENCE IN SANITARY ENGINEERING.—A candidate for the degree Master of Science in Sanitary Engineering must have previously received the degree B.S. in Engineering from this University; or, if he was graduated elsewhere, he must satisfy the fac-

ulty that he possesses equivalent attainments. In his previous work he must have included courses in Elementary Bacteriology, Water Supply, Sewerage and Structural Engineering. Study and residence for not less than one year and a thesis on an approved subject are required. A year's work includes forty-five hours, of which not less than nine hours should be given to the thesis. The thesis in form shall comply with the specifications adopted by the faculty of the College of Engineering for the bachelor's thesis. Two bound copies of the thesis shall be deposited with the University Library before the diploma is conferred.

ENGINEER.—A candidate for the degree Civil Engineer, Electrical Engineer or Mechanical Engineer must have previously received the degree B.S. in Engineering from this University; or if he was graduated elsewhere, he must satisfy the faculty that he possesses equivalent attainments. He must choose major subjects equal to not less than thirty term hours in the same course as that in which he received his undergraduate engineering degree, and in addition must choose minor subjects not to exceed fifteen term hours from the same or other engineering courses. A thesis on a topic to be approved by his major professor is required in addition to the forty-five hours' work covered by the major and minor subjects. The thesis shall be equivalent to not less than nine term hours' credit. A further requirement is that the candidate must have had responsible charge of engineering work for at least one year. Residence at the University for at least one year is required of all resident graduate students. The academic work of graduates of this University need not be done in residence. A non-resident candidate must be registered for at least two years before coming up for his degree. The thesis and all work required for the degree must be completed at least one month before the annual commencement at which the candidate expects to receive his degree. The thesis in form shall comply with the specifications adopted by the faculty of the College of Engineering for the bachelor's thesis. Two bound copies of the thesis shall be deposited with the University Library before the diploma is conferred. The candidate shall be approved at the time of registration and the final examination shall be given by a committee composed of the heads of the Civil, Electrical and Mechanical Engineering Departments. The report of the examining committee is transmitted to the Dean of the Graduate School.

MEDICAL DEGREES

DOCTOR OF OPHTHALMOLOGY.—A candidate for the degree Doctor of Ophthalmology must be a graduate of a standard medical school and must have the preliminary education in mathematics and optics. In order to receive the degree D.Oph., he must have done at least three years of graduate work with Ophthalmology as a major subject. One or more courses in Ophthalmology must be completed in the University of Colorado. Each candidate must pass an examination, written, oral, microscopical, and clinical; and must submit an original thesis and stand examination thereon. Six weeks residence in Denver is required.

THE DEGREE DOCTOR OF PHILOSOPHY

APPLICATION FOR ADMISSION TO CANDIDACY.—A student who has been admitted to the Graduate School, and who wishes to become a candidate for the degree Doctor of Philosophy, may make application at any time after admission, provided that he shall not apply later than eight months before the time at which he expects to receive the degree. The form of application is the same as for Master of Arts degree.

REQUIREMENTS FOR THE DEGREE DOCTOR OF PHILOSOPHY.—A reading knowledge of both French and German, with special reference to the candidate's field of study, shall be required before admission to candidacy, and upon this requirement the applicant must satisfy a committee consisting of the heads of the French and the German departments and of the professor in charge of the major subject. A knowledge of other languages may also be required, if demanded by the professor in charge of the major subject. The minimum requirement for the degree Doctor of Philosophy is not less than three full years devoted to study, equivalent to not less than ninety term hours, and to the preparation of a thesis. But the degree shall be granted not for the completion of any specified period of residence or number of hours' study, but for high attainments in general, and marked ability in a special field, including particularly power in original investigation proved by a thesis. Part of the time required may be spent in some other university of approved standing, provided at least one year of three consecutive quarters is spent in the University of Colorado. Studies leading to the degree Doctor of Philosophy must be divided into three groups, known as the major subject, the first minor subject, and the second minor subject.

The first minor subject shall consist of the equivalent of at least twenty-two term hours, and the second of twelve. Each subject shall be in a different department from the others. A thesis, showing power in original investigation, shall be written upon some subject approved by a committee consisting of the heads of the three departments concerned, and shall be finished and submitted in type-written form at least sixty days before the time at which the degree is to be conferred, and must be satisfactory to the committee of three above mentioned. Printed or typewritten copies, bound, to the number of three or more at the discretion of the committee, shall be placed in the University Library before the diploma is delivered. The regular written examinations on such subjects as are taken in class may be required at the discretion of each instructor, but, in any case, a preliminary and a final examination are required. The preliminary examination is oral, or oral and written, the oral examination being conducted by all instructors concerned, in the presence of a committee consisting of the heads of the departments in which the major and minor subjects lie, and is held at least six months before the time at which the degree is to be conferred. The final examination is oral, and is conducted in the presence of a committee consisting of the heads of the departments interested and two other professors appointed by the Dean of the Graduate School, and in the presence of visitors. The report of the examining committee is transmitted to the Dean of the Graduate School.

SUMMER QUARTER WORK FOR DEGREE MASTER OF ARTS

RULES AND REQUIREMENTS.—In general, the rules and requirements for the degree Master of Arts in the regular sessions of the University apply to students working toward that degree in the Summer Quarter, except the rules as to matriculation, residence, registration, application for candidacy, and examination. The requirements as to residence may be met by attending three full quarters. A student who intends to enter the Summer Quarter and who wishes to work toward the degree Master of Arts, should communicate early in the Spring with the resident professor in charge of the major subject, and should consult with the instructor in charge of the major subject in the Summer Quarter before registering for courses. He should make application for admission to the Graduate School at the beginning of the first Summer Quarter attended and should make application for candidacy by September

preceding the Summer Quarter in which he intends to finish his required work. A graduate of another university must pay the matriculation fee of ten dollars before the close of the first Summer Quarter; but he shall pay the matriculation fee only once, and shall be exempt from all other fees except the Summer Quarter fees and the diploma fee. A candidate for the Master's degree takes the regular examinations upon work done in class, together with such supplementary examinations, as his instructors may require, and on completion of the required work, he shall take a final examination covering all courses of study pursued and his thesis. This final examination is oral, or oral and written, the oral examination being conducted in the presence of a committee, two members of which shall be regular professors of the faculty of the University of Colorado.

MASTER'S DEGREE IN CONNECTION WITH THE EXTENSION DIVISION

By written consent of the major department concerned, filed with the Dean of the Graduate School, any person eligible to candidacy for the degree Master of Arts, who has done satisfactory graduate work during one Summer Quarter of the University, except as noted below, may be admitted to candidacy for a Master's Degree upon the following terms: The candidate must conform to all of the regulations for candidates for the Master's Degree with exception of the requirement of residence for one year. During not less than two terms in two successive summer quarters, the candidate must pursue a course of advanced study arranged and approved by the department of the university in which his major subject is to be taken. During the included two years between the first and third of these Summer Quarters, while not in residence at the University, he must pursue through the Extension Division, work in continuation of, or collateral to, this major subject, to the extent of fifteen of the forty-five hours required for the Master's Degree. The requirement of attendance at a Summer Quarter before graduate work is permitted under this plan, may be waived, with the consent of the departments involved, in the case of alumni of this University or of Extension classes conducted by members of the University faculty. This does not excuse the candidate from residence at the University during at least four terms, each consisting of half a quarter.

ORDER OF DESCRIPTION OF COURSES

Few of the courses outlined below are available in any one year, but each department usually offers one or more every year that may be taken as a minor for the Master's Degree. Courses not scheduled here may be arranged to meet needs of candidates of ability. Students intending to take courses toward the degree Doctor of Philosophy or toward a major for Master of Arts will find advantage in consulting with the Dean and the head of the department concerned as early as the middle of the previous quarter.

Biochemistry.	Law.
Biology.	Literature, Comparative and
Chemistry.	English.
Civil Engineering.	Mathematics.
Education.	Mechanical Engineering.
Electrical Engineering.	Music.
English Language.	Ophthalmology.
Geology, Mineralogy and	Philosophy.
Geography.	Physics.
Germanic Languages and	Psychology.
Literatures.	Romance Languages and
Greek Language and Literature.	Literatures.
History.	Social Science.
Latin Language and Literature.	

DESCRIPTION OF COURSES*

BIOCHEMISTRY

PROFESSOR LEWIS:

1. BIOCHEMISTRY (PHYSIOLOGICAL CHEMISTRY).

See course 25 in Department of Chemistry.

*Open to Graduate Students Only.*2. CHEMISTRY OF BLOOD. Any quarter. Time to be arranged. 3 h.
or 5 h.

A practical laboratory course in the use of the most recent methods for the chemical analysis of blood. Pathological bloods

* Graduate courses that may be elected by undergraduates also are listed under the same numbers as in the College of Liberal Arts, see page 59. Courses for graduates only are described here.

will be used for comparison with the normal whenever such material is available.

Prerequisite: Course 1.

3. BIOCHEMICAL PREPARATIONS. Any quarter. Time to be arranged. Practice in the preparation of compounds of biochemical importance.

Prerequisite: Course 1.

4. BIOCHEMICAL SEMINAR. Throughout the year. Time to be arranged. 2 h.

Reports of contributions to biochemical literature are made and are discussed in the light of recent advances in biochemistry.

5. RESEARCH IN BIOCHEMISTRY. Any quarter. Time to be arranged.

Persons properly qualified may pursue research work under guidance. Credit allowed will depend upon the character of the work accomplished.

BIOLOGY

I. GENERAL BIOLOGY

PROFESSORS COCKERELL AND RAMALEY:

4. HISTORY OF BIOLOGY.
5. GENETICS.
6. PLANKTONOLOGY.
7. MICROBIOLOGY.
8. PUBLIC HEALTH PROBLEMS.
9. TEACHERS' COURSE IN BIOLOGY.

For Graduates Only.

12. SPECIAL PROBLEMS.

Genetics, History of Biology, Biological Pedagogics.

II. BOTANY

PROFESSOR RAMALEY:

3. PLANT MORPHOLOGY.
4. ADVANCED ECONOMIC BOTANY.
5. BOTANY OF COLORADO (PLANT TAXONOMY).
6. PLANT PHYSIOLOGY.
7. PLANT ECOLOGY.

8. FOREST BOTANY.
9. PLANT ANATOMY.
10. MYCOLOGY.
11. ECOLOGY AND TAXONOMY. (Summer quarter at Tolland.)

For Graduates Only.

12. SPECIAL PROBLEMS.

Plant Anatomy, Agrostology, Ecology, Floristics, Areal Botany, Plant Genetics, Gametophytic and Sporophytic Embryology.

Research work in Ecology is especially provided at the Summer Mountain Laboratory at Tolland, Colorado. Prospective students should consult the Summer Quarter announcement and communicate with Professor Francis Ramaley, Boulder, Colorado, who is in charge.

III. ZOOLOGY

PROFESSOR COCKERELL AND MISS GREEN:

1. COLLEGE ZOOLOGY. (Spring quarter.)
2. VERTEBRATE ANATOMY.
3. PHYSIOLOGY.
- 5, 6. COMPARATIVE MORPHOLOGY.
7. ANIMAL ECOLOGY.
8. CYTOLOGY.
9. ENTOMOLOGY.
12. FIELD ZOOLOGY.

For Graduates Only.

14. SPECIAL PROBLEMS.

Taxonomy of Hymenoptera, Coccidæ (scale insects), Paleontology, Ichthyology, Protozoology, Pond and Stream Zoology, and other topics as opportunity offers.

CHEMISTRY

PROFESSOR EKELEY, ASSISTANT PROFESSOR DEAN, MR. LOOMIS,
MR. VANVALKENBURGH, AND MR. CORNELL:

3. ADVANCED INORGANIC CHEMISTRY.
- 4-5. QUALITATIVE ANALYSIS.
6. QUANTITATIVE ANALYSIS.
7. ORE ANALYSIS.

8. ANALYSIS OF IRON AND STEEL.
9. GAS ANALYSIS.
10. ELEMENTARY ORGANIC ANALYSIS.
11. SANITARY WATER ANALYSIS.
12. MINERAL WATER ANALYSIS.
13. ORGANIC CHEMISTRY.
14. LABORATORY PRACTICE IN ORGANIC PREPARATIONS.
15. PHYSICAL CHEMISTRY. LECTURES.
16. PHYSICAL CHEMISTRY. LABORATORY.
17. ELECTROCHEMICAL ANALYSIS.
18. FOOD ANALYSIS.
19. DRUG ASSAYING. PHARMACOPOEIAL TESTING.
20. DRUG ASSAYING. ORGANIC ANALYSIS.
21. DRUG ASSAYING. ALKALOIDAL ASSAYING.
22. ADVANCED FOOD ANALYSIS.
23. HISTORY OF CHEMISTRY.
25. BIOCHEMISTRY.
26. INDUSTRIAL CHEMISTRY.

CIVIL ENGINEERING

PROFESSORS KETCHUM AND HUNTINGTON:

For Graduates Only.

101. RAILWAY LOCATION AND CONSTRUCTION.
102. YARDS AND TERMINALS.
103. SIGNAL ENGINEERING.
104. RAILWAY OPERATION, MANAGEMENT, AND VALUATION.
105. TUNNELS AND CANALS.
110. ADVANCED BRIDGE DESIGN.
111. SWING AND MOVABLE BRIDGES.
112. METALLIC ARCHES.
113. INDETERMINATE STRUCTURES.
114. STEEL OFFICE BUILDING CONSTRUCTION.
115. STEEL MINE AND MILL STRUCTURES.
120. REINFORCED CONCRETE CONSTRUCTION.
130. GENERAL WATER WORKS CONSTRUCTION AND MANAGEMENT.
131. TANKS, STANDPIPES AND RESERVOIRS.
140. SEWAGE PURIFICATION AND DISPOSAL WORKS.
141. GENERAL SEWERAGE DESIGN AND CONSTRUCTION.
150. IRRIGATION ENGINEERING STRUCTURES.

151. IRRIGATION ENGINEERING STUDIES.
152. DAMS AND RESERVOIRS FOR IRRIGATION.
160. ADVANCED HYDRAULICS.
161. ADVANCED APPLIED MECHANICS.

EDUCATION

PROFESSORS THOMPSON, CLAPP, COLE, AND LIBBY, AND
MISS McFARLAND:

- 2.* COMPARATIVE PSYCHOLOGY.
- 3.* ADVANCED PSYCHOLOGY.
- 4.* PATHOLOGICAL PSYCHOLOGY.
- 5.* EXPERIMENTAL PSYCHOLOGY.
- 6.* EDUCATIONAL PSYCHOLOGY.
- 9.* MENTAL TESTS.
6. PUBLIC SCHOOL PROGRAM OF STUDIES.
7. HISTORY AND PHILOSOPHY OF EDUCATION.
8. SECONDARY EDUCATION.
9. PRINCIPLES OF PRE-SCHOOL EDUCATION.
10. ANTHROPOLOGY.
11. ETHNOGRAPHY.
12. ETHNOLOGY.
13. SOCIAL PSYCHOLOGY.
14. EDUCATION AND SOCIETY.
15. SCHOOL SUPERVISION.
16. PRACTICUM IN EDUCATION.
17. SEMINAR IN EDUCATION.

For Graduates Only.

- 12.* ADVANCED EXPERIMENTAL PSYCHOLOGY.

ELECTRICAL ENGINEERING

PROFESSORS EVANS, AND DWIGHT, ASSISTANT PROFESSOR JENKINS,
AND MR. McCORMICK:

For Graduates Only.

101. THEORY OF ALTERNATING CURRENTS.
102. ANALYSIS AND DESIGN OF ALTERNATING CURRENT APPARATUS.
103. ANALYSIS AND DESIGN OF DIRECT CURRENT APPARATUS.
104. SWITCHBOARD DESIGN AND CONSTRUCTION.

* These numbers refer to courses in the Department of Psychology.

105. THE TESTING OF ELECTRICAL MACHINERY.
106. ELECTRICAL ENGINEERING RESEARCH.
107. TELEPHONES AND TELEGRAPH.
108. ELECTRICAL TRANSMISSION OF POWER.
109. ELECTRIC LIGHT AND POWER PLANTS.
110. ELECTRO-METALLURGICAL INDUSTRIES.
111. ADVANCED ELECTRICAL ENGINEERING LABORATORY.
112. ILLUMINATING ENGINEERING.

ENGLISH LANGUAGE

PROFESSOR McLUCAS:—

- 9-10. ANGLO-SAXON.
11. MIDDLE ENGLISH.
12. CHAUCER.
13. SHAKESPEARE.
14. PRE-SHAKESPEREAN DRAMA.

GEOLOGY, MINERALOGY, AND GEOGRAPHY

PROFESSORS GEORGE, HENDERSON, AND CRAWFORD, AND ASSISTANT
PROFESSOR WORCESTER:

I. GEOLOGY

4. ECONOMIC GEOLOGY.
6. OIL GEOLOGY.
7. GEOLOGIC SURVEYING.
8. ADVANCED GEOLOGY.
9. GEOLOGY OF COLORADO.
10. GEOLOGY CULTURE COURSE.
11. PALEONTOLOGY.

For Graduates Only.

12. RESEARCH GEOLOGY. One, two or three quarters.

The work will be chiefly individual, and will depend largely on the preparation of the student. The vicinity of Boulder, and the State as a whole, offer a wide range of problems for research. The credit allowed will depend upon the time given to the work and the character of the results obtained.

NOTE—The establishment of the State Geological Survey gives very exceptional opportunities to a limited number of advanced students in geology.

II. MINERALOGY AND PETROLOGY

3. ADVANCED MINERALOGY.
4. FIRE ASSAYING.
5. ADVANCED CRYSTALLOGRAPHY.
6. OPTICAL MINERALOGY.
7. PETROGRAPHY.

For Graduates Only.

8. PETROLOGY. Throughout the year. 2 or 3 h. each quarter.
An advanced course which includes the microscopic study of rocks from typical districts, reading of petrologic literature, and one weekly period for lectures and reports.
9. CHEMICAL MINERALOGY.
Either quantitative-analytic mineralogy or the investigation of special problems involving laboratory and library research may be undertaken by students who have had adequate preparation.

III. GEOGRAPHY

2. CLIMATOLOGY.
4. ADVANCED PHYSIOGRAPHY.
6. GEOGRAPHY OF EUROPE.

GERMANIC LANGUAGES AND LITERATURES

PROFESSOR VAN SWERINGEN BAUR AND ASSISTANT PROFESSOR BAUR:

9. THE GERMAN DRAMA OF THE NINETEENTH CENTURY.
10. ADVANCED COMPOSITION.
12. GOETHE'S FAUST: PARTS I AND II.
13. STUDIES IN THE HISTORY OF THE GERMAN NOVEL.
14. THE GERMAN NOVELLE.
17. THE HISTORY OF GERMAN LITERATURE FROM THE EARLIEST TIMES TO THE TIME OF KLOPSTOCK.
18. THE HISTORY OF GERMAN LITERATURE FROM THE TIME OF KLOPSTOCK TO THE PRESENT.
19. GERMANIC HERO-SAGAS.
20. GERMANIC MYTHOLOGY.
22. POETICS.
24. READING AND INTERPRETATION OF SELECTED GERMAN WORKS ON SOCIOLOGY AND PHILOSOPHY.

For Graduates Only.

25. DEUTSCHE AUFSÄTZE. 2 h.
26. DEUTSCHE PHONETIK UND AUSSPRACHE. 2 h.
27. GOTHIC. Two quarters. 3 h.
Phonology and inflections of Gothic; relation of Gothic to German and English; reading of extracts in Braune's *Gotische Grammatik*.
28. OLD HIGH GERMAN. Three quarters. 3 h.
Braune's *Althochdeutsche Grammatik*, and *Althochdeutsches Lesebuch*.
29. MIDDLE HIGH GERMAN. Three quarters. 2 h.
Paul's *Mittelhochdeutsche Grammatik*; reading of Hartman von Aue's *Der arme Heinrich*.
30. OLD ICELANDIC. Three quarters. 3 h.
Phonology and inflection of Old Icelandic, from Noreen's *Altisländische and Altnorwegische Grammatik*.
Reading of Heusler's *Zwei Isländer-Geschichten*.
31. THE EDDA. Three quarters. 3 h.
Gering's Edition of Hildebrand's *Edda Lieder*.
32. EINFÜHRUNG IN DAS STUDIUM DER GERMANISCHEN SPRACHEN.
Two quarters. 3 h.
33. GOETHE SEMINAR. Two quarters. 2 h.

GREEK LANGUAGE AND LITERATURE

PROFESSORS DERHAM AND HELLEMS, DR. WILKINS, AND MISS CRAIG:

6. PLATO.
Interpretation of the Republic with lectures on Platonism.
7. COMEDY.
Aristophanes, *Clouds* and *Frogs*.
8. GREEK HISTORIANS.
Herodotus and Thucydides.
9. PASTORAL POETRY.
Theocritus, Bion, and Moschus.
10. LYRIC POETS.
Early lyric poets with introduction to Pindar and Bacchylides.
11. ADVANCED PROSE COMPOSITION.

For Graduates Only.

17. THE TRAGEDIES OF AESCHYLUS.
18. ARISTOTLE, POETICS.
19. HISTORY OF GREEK COMEDY.
20. INTRODUCTION TO GREEK EPIGRAPHY.
21. STUDY OF GREEK DIALECTS FROM INSCRIPTIONS.
22. SEMINAR IN POETS OF ALEXANDRIAN PERIOD.
23. SEMINAR IN EARLY GREEK PHILOSOPHY.
24. SEMINAR IN GREEK RELIGION AND ETHICS.

HISTORY

PROFESSOR WILLARD, ASSISTANT PROFESSORS ECKHARDT AND MARSHALL:

Open to Graduates on Consultation.

10. THE POLITICAL THEORIES OF PLATO AND ARISTOTLE.
11. THE FALL OF THE ROMAN REPUBLIC.
12. THE ROMAN EMPIRE.
13. THE MEDIÆVAL CHURCH AND THE REFORMATION.
14. ENGLISH MEDIÆVAL INSTITUTIONS.
15. THE ITALIAN RENAISSANCE.
17. ADVANCED MODERN EUROPEAN HISTORY.
19. THE WESTWARD MOVEMENT.
22. RESEARCH COURSE IN THE HISTORY OF THE WEST.
24. HISTORIOGRAPHY.

LATIN LANGUAGE AND LITERATURE

PROFESSORS HELLEMS AND DERHAM:

15. LUCRETIIUS.
18. MARTIAL.
21. SUTONIUS.
23. ADVANCED LATIN PROSE.
24. GREEK AND ROMAN ARCHÆOLOGY.
25. MINOR LATIN POETS.

A study of the more significant among the minor poets.

For Graduates Only.

26. ROMAN LAW.
 - (1) Gaii Institutiones Juris Civilis. 3 h.
 - (2) Elements of Roman Law. 3 h.

27. ROMAN ADMINISTRATION. 3 h.

The development of Roman public institutions in their historical sequence.

28. ROMAN TOPOGRAPHY. 3 h.

The topography of Rome in the historical development of the city.

29. INTERPRETATION OF EARLY LATIN. 3 h.

Selected examples of Early Latin.

30. EPIGRAPHY. 3 h.

Cagnat's *Cours d'Epigraphie Latine*; Egbert's Introduction; handling of the *Corpus Inscriptionum Latinarum*.

31. LATIN MORPHOLOGY. 3 h.

The subject will be approached from the comparative side.

32. LATIN SYNTAX. 3 h.

The subject will be treated comparatively.

33. LATIN PALEOGRAPHY. 3 h.

An introduction to the subject.

• 34. SEMINAR ON TRAJAN.

A study of the sources for the life and reign of Trajan; particular stress will be laid on the epigraphical side.

35. TACITUS. 3 h.

A rapid reading course in the *Annals* with a consideration of the historical problems raised.

36. PERSIUS. 3 h.

Interpretation of the text; Stoicism in the early Empire.

37. ROMAN PROVINCIAL ADMINISTRATION.

Pliny, *Letters*, book X; selections from Cicero's correspondence.

LAW

PROFESSOR FLEMING:

CONSTITUTIONAL LAW. 7 h.

IRRIGATION. 3 h.

MINING LAW. 4 h.

SALES OF PERSONAL PROPERTY. 4 h.

PROFESSOR ARTHUR:

PROPERTY. 8 h.

WILLS. 4 h.

BILLS AND NOTES. 4 h.

MORTGAGES. 3 h.

PROFESSOR HADLEY:

PRIVATE AND MUNICIPAL CORPORATIONS. 8 h.

PUBLIC UTILITIES. 3 h.

LITERATURE, COMPARATIVE AND ENGLISH

PROFESSOR BRACKETT, MR. COOKE, MRS. MATHEW AND DR. DEAN:

1. ART FORM.
8. SHAKESPEARE.
9. THE GREAT DRAMA.
12. WORLD DRAMA.
13. LYRIC POETRY.
14. THE GREAT EPICS.
15. MASTERPIECES OF PROSE FICTION.
16. MILTON.
17. SHELLEY.
18. TENNYSON.
19. BROWNING.
21. LITERARY FORMS OF TODAY.

For Graduates Only.

22. STUDIES IN VICTORIAN LITERATURE AND ART. Throughout the year. 5 h. 1914.

Ruskin and Turner; the Pre-Raphaelite Movement; the Rossettis; Burne-Jones; Holman Hunt; George Frederick Watts; William Morris; Walter Crane.

23. THE PREDECESSORS OF SHAKESPEARE. 5 h.
24. THE RENAISSANCE IN EUROPE. 5 h.
25. THE TEACHING OF LITERATURE.
26. THE HISTORY OF ENGLISH PROSODY. 1917.
27. THE HISTORY OF CRITICISM. 1917.
28. THE RHYTHMS OF ENGLISH PROSE. 1916.

MATHEMATICS

PROFESSOR DeLONG, ASSISTANT PROFESSOR LIGHT, AND MISS KENDALL:

4. DIFFERENTIAL AND INTEGRAL CALCULUS. As a minor to majors in science.
11. TEACHING OF MATHEMATICS. As a minor to majors in science.
12. HISTORY OF MATHEMATICS. As a minor to majors in science.
13. THEORY OF INVESTMENT. As a minor to majors in science.

5. DIFFERENTIAL EQUATIONS.
6. LIE THEORY OF DIFFERENTIAL EQUATIONS.
9. ANALYTIC SOLID GEOMETRY.
10. MODERN GEOMETRY.
15. COMPLEX FUNCTIONS, PROJECTIVE GEOMETRY, AND TRANSCENDENTAL FUNCTIONS.

For Graduates Only.

16. HIGHER PLANE CURVES.
17. THEORY OF INVARIANTS.
18. MATHEMATICAL THEORY OF PROBABILITY AND SOME OF ITS APPLICATIONS.
19. DIFFERENTIAL GEOMETRY.
20. DIFFERENTIAL EQUATIONS FOR PHYSICISTS.
21. CALCULUS OF VARIATIONS.
22. CELESTIAL MECHANICS.
23. PERIODIC ORBITS.
24. PARTIAL DIFFERENTIAL EQUATIONS.

MECHANICAL ENGINEERING

PROFESSORS HUNTER AND BLACK, AND ASSISTANT PROFESSORS BAUER AND SIMMERING:

For Graduates Only.

101. ADVANCED MACHINE DESIGN.
102. GRAPHICS AND KINEMATICS.
103. ADVANCED STEAM ENGINEERING.
104. EXPERIMENTAL ENGINEERING.
105. PNEUMATICS.
106. RAILWAY MECHANICAL ENGINEERING.
107. MECHANICAL REFRIGERATION.
108. ADVANCED GAS ENGINES.

MUSIC

PROFESSOR CHADWICK:-

3. COUNTERPOINT.
4. CANON AND FUGUE.
5. COMPOSITION AND ORCHESTRATION.
6. HISTORY OF MUSIC.
7. AESTHETICS AND PHILOSOPHY OF MUSIC.

OPHTHALMOLOGY

For courses see page 268.

PHILOSOPHY

PROFESSOR LIBBY, AND MISS UNDERHILL:-

All candidates must get from the Department of Philosophy a written statement of specific requirements at the beginning of each year. The *thesis-subject* may be chosen from any branch of Philosophy.

For A.M.

For *major*, high grades in undergraduate courses and advanced readings in sources of Philosophy, and in Metaphysics; for *minor*, a thorough knowledge of the whole history of Philosophy.

For Ph.D.

For *major*, courses for A.M. major, with further advances in history of Philosophy and in special disciplines. Candidate must be able to read German and French at sight. For *minor*, advanced history of Philosophy only, including special knowledge of two philosophers.

PHYSICS

PROFESSORS LESTER AND WOODROW, AND ASSISTANT
PROFESSOR RANDOLPH:

For Advanced Undergraduates and Graduates.

3. ANALYTICAL MECHANICS—STATICS.
4. ANALYTICAL MECHANICS—DYNAMICS.
6. THEORY OF ELECTRICITY AND MAGNETISM I.
7. THEORY OF ELECTRICITY AND MAGNETISM II.
8. ELECTRICAL MEASUREMENTS I.
9. ELECTRICAL MEASUREMENTS II.
10. PROPERTIES OF MATTER. Omitted 1919-1920.
11. HEAT AND THERMODYNAMICS.
14. THEORY OF LIGHT.
15. ELECTRIC WAVES AND RADIO-COMMUNICATION.
16. WIRELESS TELEGRAPHY AND TELEPHONY.
17. ELECTRICAL MEASUREMENTS III.
18. VECTOR ANALYSIS. Omitted 1919-1920.
41. INTRODUCTION TO MATHEMATICAL ASTRONOMY.

Primarily for Graduates.

100. KINETIC THEORY OF GASES. Winter quarter. 3 h. Lectures and recitations.

The important physical properties of gases will be considered from the viewpoint of the kinetic theory of matter.

Prerequisite: Course 13 and calculus; Course 6 advised.

101. CONDUCTION OF ELECTRICITY THROUGH GASES. Winter quarter. 4 h. Lectures and recitations. Omitted 1919-1920.

A course dealing with the properties of ions and electrons in their relation to the passage of electricity through gaseous media.

Prerequisite: Courses 6, 8, 10 and calculus.

102. ADVANCED ANALYTICAL MECHANICS. Winter and spring quarters. 3 h.

Prerequisite: Courses 5, 6, calculus and differential equations.

103. RADIOACTIVITY. Autumn quarter. 3 h.

Prerequisite: Courses 1, 2, 8, 101, and calculus.

104. MEASUREMENTS IN RADIOACTIVITY. Winter quarter, two three-hour laboratory periods. 2 h.

105. ELECTRON THEORY. Winter and spring quarters. 3 h.

A course of lectures and reading dealing with the evidence which has led to the discovery of the electron, and to the idea of the corpuscular structure of matter. The role played by these ideas in modern physics will be considered at length.

Prerequisite: Permission of the instructor.

106. ADVANCED MATHEMATICAL PHYSICS. Three quarters.

Hours and credit to be arranged.

A course dealing with certain phases of theoretical physics, involving not only a somewhat extensive knowledge of physics, but also considerable mathematical equipment.

Prerequisite: Permission of the instructor.

107. RESEARCH AND JOURNAL CLUB. An organization composed of all instructors, graduate and advanced undergraduate students in the departments of physics and chemistry, meeting once a week from 4:00 to 6:00 for the discussion of recent research.

PSYCHOLOGY

PROFESSORS COLE AND THOMPSON, AND MISS MCFARLAND:

2. COMPARATIVE PSYCHOLOGY.
3. ADVANCED PSYCHOLOGY.
4. PATHOLOGICAL PSYCHOLOGY.
5. EXPERIMENTAL PSYCHOLOGY.
6. EDUCATIONAL PSYCHOLOGY.
7. THE PSYCHOLOGY OF GRAMMAR-SCHOOL AND HIGH-SCHOOL SUBJECTS.
10. SOCIAL PSYCHOLOGY. (EDUCATION 13.)
11. ANATOMY OF THE CENTRAL NERVOUS SYSTEM.

For Graduates Only.

12. ADVANCED EXPERIMENTAL PSYCHOLOGY.

Students in this course will be expected to carry on systematic investigations in special problems.

ROMANCE LANGUAGES

PROFESSOR AYER, AND MISS SNYDER:

FRENCH

4. SEVENTEENTH CENTURY. Autumn quarter. 3 h.
Corneille and Racine.
5. SEVENTEENTH CENTURY. Winter quarter. 3 h.
Molière.
6. NINETEENTH CENTURY. Spring quarter. 3 h.
Romantic School, modern poetic drama of Rostand.
7. THE EIGHTEENTH CENTURY. Autumn quarter. 2 h.
8. THE SIXTEENTH CENTURY. Winter quarter. 2 h.
9. FRENCH LITERARY CRITICISM. Spring quarter. 2 h.
10. FRENCH LYRIC POETRY. Autumn quarter. 1 h.
12. SYNTAX OF THE FRENCH VERB. Spring quarter. 1 h.

For Graduates Only.

16. OLD FRENCH WITH COMPARATIVE ROMANCE PHILOLOGY. 2 h.
Clédat's Chrestomathie du Moyen-Age.
17. COMPARATIVE ROMANCE SYNTAX ON BASIS OF FRENCH. 2 h.

SPANISH

4. NINETEENTH CENTURY DRAMA. Autumn quarter. 3 h.
5. NINETEENTH CENTURY NOVEL. Winter quarter. 3 h.
6. THE SEVENTEENTH CENTURY. Spring quarter. 3 h.
Calderon, Lope de Vega, Cervantes.
7. SPANISH LYRIC POETRY. Spring quarter. 1 h.

For Graduates Only.

8. OLD SPANISH WITH COMPARATIVE ROMANCE PHILOLOGY. 2 h.
Based on Ford's Old Spanish Readings.

ITALIAN

2. DANTE'S DIVINE COMEDY. (Omitted in 1919-1920.) 2 h.
3. ALFIERI AND GOLDONI. (Omitted in 1919-1920.) 2 h.

For Graduates Only.

4. OLD ITALIAN. 2 h.

Comparative Romance Philology with special reference to Italian. Monaci's Crestomazia dei primi secoli.

PORTUGUESE

For Graduates Only.

1. GRAUERT'S PORTUGUESE GRAMMAR. 2 h.
A quick course in grammar with much sight reading.
Prerequisite: French, Spanish, and Italian.

SOCIAL SCIENCE

PROFESSORS BUSHEE AND PATTERSON, AND MR. INGRAHAM:

I. ECONOMICS

8. STATISTICS.
9. LABOR PROBLEMS.
11. MONEY AND BANKING.
12. TRANSPORTATION.
13. TAXATION.
14. CORPORATIONS.
15. LIFE INSURANCE.
17. TRUSTS.
18. BUSINESS ORGANIZATION AND SCIENTIFIC MANAGEMENT.
20. PRINCIPLES OF ADVERTISING.

For Graduates Only.

21. HISTORY AND CRITICISM OF ECONOMIC THEORIES. Autumn quarter. 2 h.

Lectures, reading, reports.

The lectures will deal with the economic ideas of Plato and Aristotle; the influence of the Roman Law; the Canonists; Mercantilists; Physiocrats; Adam Smith; Ricardo; Malthus; John Stuart Mill; the Historical School; Jevons and the Austrian School. The aim is not only to study the content of economic theory, but also to exhibit theory in the light of political and social conditions.

22. SEMINAR IN ECONOMICS. Three quarters. 2 h.

II. SOCIOLOGY

1. PRINCIPLES OF SOCIOLOGY.
2. PROBLEMS IN SOCIOLOGY.
3. SOCIALISM.
5. ADVANCED THEORY OF SOCIOLOGY.

For Graduates Only.

7. SEMINAR IN SOCIOLOGY. Three quarters. 2 h.

III. POLITICAL SCIENCE

3. COMPARATIVE EUROPEAN GOVERNMENT.
4. MUNICIPAL GOVERNMENT.
5. POLITICAL PARTIES AND PARTY PROBLEMS.
6. CONSULAR AND DIPLOMATIC SERVICE.
7. INTERNATIONAL LAW.
8. MUNICIPAL PROBLEMS.

SCHOOL OF MEDICINE

FACULTY*

GEORGE NORLIN, Ph.D., President of the University.

CHARLES N. MEADER, A.B., M.D., Dean; Professor of Medicine and Head of the Department.

† WILLIAM P. HARLOW, A.B., M.D., Dean Emeritus.

ROSS C. WHITMAN, A.B., M.D., Secretary of the Boulder Division; Professor of Pathology and Head of Department.

LUMAN M. GIFFIN, M.D., Professor of Surgery, Emeritus.

‡ JOHN CHASE, A.B., M.D., Professor of Ophthalmology, Emeritus.

THOMAS E. TAYLOR, A.B., M.D., Professor of Obstetrics, Emeritus.

WILLIAM B. CRAIG, M.D., Professor of Surgery, Emeritus.

E. BARBER QUEAL, M.D., Professor of Physiology, Emeritus.

CHARLES S. ELDER, M.D., Professor of Surgery, Emeritus.

NEWTON WIEST, M.D., Professor of Dermatology, Emeritus.

† JAMES R. ARNEILL, A.B., M.D., Professor of Medicine, Emeritus.

JOHN M. FOSTER, M.D., Professor of Oto-laryngology, Emeritus.

EDMUND J. A. ROGERS, A.M., M.D., Professor of Surgery, Emeritus.

THOMAS H. HAWKINS, A.M., M.D., LL.D., Professor of Surgery, Emeritus.

WILLIAM H. DAVIS, M.D., Professor of Dermatology, Emeritus.

WILLIAM J. ROTHWELL, M.D., Professor of Medicine, Emeritus.

† FRANCIS H. McNAUGHT, M.D., Professor of Obstetrics, Emeritus.

CHARLES A. POWERS, A.M., M.D., Professor of Surgery, Emeritus.

HERBERT B. WHITNEY, A.B., M.D., Professor of Medicine, Emeritus.

SHERMAN G. BONNEY, A.M., M.D., Professor of Medicine, Emeritus.

* Faculty members in the several grades are arranged in the order of their appointment.

† On war service.

‡ Died May 4, 1918.

GEORGE B. PACKARD, M.D., Professor of Orthopedics, Emeritus.

T. MITCHELL BURNS, M.D., Professor of Obstetrics, Emeritus.

*WALTER A. JAYNE, M.D., Professor of Gynecology, Emeritus.

CHARLES B. VAN ZANT, M.D., Professor of Physiology, Emeritus.

WILLIAM C. MITCHELL, M.D., Professor of Bacteriology, Emeritus.

DAVID H. COOVER, M.D., Professor of Ophthalmology, Emeritus.

CHARLES B. LYMAN, M.D., Professor of Clinical Surgery, and Head of Department.

EDWARD JACKSON, A.M., M.D., Sc.D., Professor of Ophthalmology, and Head of Department.

†CLOUGH T. BURNETT, M.D., Professor of Bacteriology and Head of Department.

GEORGE E. NEUHAUS, M.D., Professor of Neurology and Psychiatry and Head of Department.

‡ROBERT LEVY, M.D., Professor of Oto-laryngology and Head of Department.

LEONARD FREEMAN, B.S., A.M., M.D., Professor of Surgery and Head of Department.

JAMES C. TODD, Ph.B., M.D., Professor of Clinical Pathology and Head of Department.

‡CARBON GILLASPIE, M.D., Professor of Anatomy and Head of Department.

‡ARTHUR J. MARKLEY, D.D.S., M.D., Professor of Dermatology and Head of Department.

ROBERT C. LEWIS, Ph.D., Director of Henry S. Denison Research Laboratory; Professor of Biochemistry and Head of Department.

‡CLARENCE B. INGRAHAM, Ph.B., M.D., Professor of Obstetrics and Gynecology and Head of Department.

CHARLES M. GRUBER, Ph.D., Professor of Physiology and Pharmacology and Head of Department.

IVAN E. WALLIN, Sc.D., Acting Professor of Anatomy and Acting Head of Department.

OSCAR M. GILBERT, M.D., Associate Professor of Medicine.

* On war service.

† On leave of absence, February, 1918 to February, 1919, for war service.

‡ On leave of absence for war service.

*JOSIAH N. HALL, B.S., M.D., Associate Professor of Medicine.

HOWELL T. PERSHING, M.S., M.D., LL.D., Associate Professor of Psychiatry.

MOSES KLEINER, M.D., Associate Professor of Therapeutics.

MELVILLE BLACK, M.D., Associate Professor of Ophthalmology.

SAMUEL B. CHILDS, A.B., M.D., Associate Professor of Roentgenology.

WILLIAM C. BANE, M.D., Associate Professor of Oto-Laryngology.

*OLIVER LYONS, M.D., Associate Professor of Genito-Urinary Surgery.

*SAMUEL FOSDICK JONES, M.D., Associate Professor of Orthopedic Surgery.

*FRANK P. GENGEBACH, M.D., Associate Professor of Pediatrics.

FROST C. BUCHTEL, M.D., Assistant Professor of Surgery.

*EDWARD F. DEAN, M.D., Assistant Professor of Clinical Surgery.

AUBREY H. WILLIAMS, M.D., Assistant Professor of Clinical Surgery.

*GEORGE H. CATTERMOLLE, M.D., Assistant Professor of Pediatrics.

EDWARD DELEHANTY, M.D., Assistant Professor of Neurology.

CLAUDE EDWARD COOPER, A.B., M.D., Assistant Professor of Oto-laryngology.

RUDOLPH W. ARNDT, M.D., Assistant Professor of Medicine.

GEORGE A. MOLEEN, M.D., Assistant Professor of Neurology.

HENRY SEWALL, Ph.D., M.D., Sc.D., Lecturer on Medicine.

JAMES H. PERSHING, A.B., Lecturer on Medical Jurisprudence.

ARTHUR H. EARLEY, M.D., Lecturer on Rectal Surgery.

ORA S. FOWLER, B.S., M.D., Lecturer on Local Anaesthetics.

*FRANK R. SPENCER, A.B., M.D., Instructor in Oto-laryngology.

CLAY E. GIFFIN, A.B., M.D., Instructor in Surgery.

*HENRY WILLIAMS WILCOX, M.D., Instructor in Orthopedic Surgery.

*CYRUS L. PERSHING, B.S., M.D., Instructor in Neurology.

ROBERT L. CHARLES, M.D., Instructor in Anaesthesia.

WILLIAM H. CRISP, M.D., D.Oph., Instructor in Ophthalmology.

EDWARD R. MUGRAGE, A.M., M.D., Director of Laboratories (Denver); Instructor in Pathology.

*WILLIAM WILEY JONES, A.B., M.D., Instructor in Medicine.

*GEORGE P. LINGENFELTER, M.D., Instructor in Dermatology and Syphilis.

JOHN MURRAY BARNEY, M.D., Instructor in Medicine.

JOHN B. DAVIS, M.D., Instructor in Genito-Urinary Surgery.

* On leave of absence for war service.

CASPER F. HEGNER, M.D., Instructor in Surgery.

OSCAR M. SHERE, M.D., Instructor in Surgery.

*CUTHBERT POWELL, M.D., Instructor in Gynecology.

FOSTER H. CARY, M.D., Instructor in Obstetrics.

CHARLES A. FERRIS, M.D., Instructor in Obstetrics.

*PHILLIPS M. CHASE, M.D., Instructor in Obstetrics.

HARRY L. BAUM, M.D., Instructor in Oto-laryngology.

TRACY R. LOVE, Ph.B., M.D., Instructor in Dietetics.

*WILLIAM C. FINNOFF, M.D., D.Oph., Instructor in Ophthalmology.

JOHN A. McCaw, M.D., D.Oph., Instructor in Ophthalmology.

*WILLIAM A. SEDWICK, M.D., Instructor in Ophthalmology.

HIRAM R. STILWILL, M.D., Instructor in Ophthalmology.

†HUGH M. KINGERY, Ph.D., Instructor in Anatomy.

FRANK C. KENNELLEY, M.D., Assistant in Medicine.

ELMERT T. BOYD, M.D., Assistant in Ophthalmology.

*WILLIAM M. BANE, M.D., Assistant in Oto-laryngology.

SARA BRANHAM, Assistant in Pharmacology and Bacteriology.

Temporary War Service Appointments.

LT. COL. JOHN R. BARBER, M.D., Lecturer in Military Hygiene and Administration.

MAJOR W. W. GRANT, M.D., Lecturer in Military Surgery.

TEACHING STAFF AT COUNTY HOSPITAL

(*On leave of absence for War Service from Hospital and Dispensary:* J. W. Ames, Wm. M. Bane, A. L. Beagler, P. M. Chase, E. W. Collins, E. F. Dean, B. C. Dorset, W. C. Finnoff, M. E. V. Fraser, H. G. Garwood, F. P. Gengenbach, J. N. Hall, C. B. Ingraham, W. A. Jayne, S. F. Jones, W. W. Jones, E. W. Lazell, R. Levy, G. P. Lingenfelter, L. K. Lunt, O. Lyons, C. G. McEachern, C. D. McKenzie, H. G. Macomber, A. J. Markley, A. M. McGugan, R. G. Packard, C. L. Pershing, J. A. Philpott, C. Powell, F. E. Rogers, W. A. Sedwick, F. R. Spencer, H. W. Wilcox.)

MEDICINE:

Principals—R. W. Arndt, C. G. Hickey, A. J. O. Löf, G. K. Olmstead, H. Sewall, A. S. Taussig.

Associates—J. M. Barney, H. S. Canby, J. L. Mortimer.

* On leave of absence for war service.

† Appointed February, 1919.

SURGERY:

Principals—W. B. Craig, E. F. Dean, L. Freeman, J. M. Perkins, A. H. Williams.

Associates—F. C. Buchtel, A. C. Craig, S. B. Eichberg, C. D. McKenzie, O. M. Shere.

TUBERCULOSIS: W. N. Beggs, H. H. Champlin, J. Gelien, A. Minnig.

GENITO-URINARY SURGERY: O. Lyons, J. B. Davis, W. M. Spitzer, R. G. Smith.

ORTHOPEDIC SURGERY: H. W. Wilcox, C. M. Spicer.

OBSTETRICS: F. H. Cary, A. McGugan, C. N. Needham.

GYNECOLOGY: C. A. Ferris, N. A. Thompson, C. Powell, H. G. Harvey, C. Jaeger.

PEDIATRICS: J. W. Amesse, G. M. Blickensderfer, F. P. Gengenbach, H. T. Ramsey.

PROCTOLOGY: A. H. Earley.

NEUROLOGY: E. Delehanty, G. A. Moleen, G. E. Neuhaus, L. V. Tepley.

DERMATOLOGY: W. H. Davis, G. P. Lingenfelter.

OPHTHALMOLOGY: D. H. Coover, John McCaw, H. R. Stilwill.

OTO-LARYNGOLOGY: W. C. Bane, H. L. Baum, E. W. Collins, C. E. Cooper, R. Levy, D. A. Strickler.

TEMPORARY WAR SERVICE APPOINTMENTS, SUMMER 1918

MEDICINE: C. A. Bundsen, F. W. Kenney, W. M. Drechler, C. A. McLauthlin.

SURGERY: H. R. McGraw, S. D. Van Meter, T. J. Danahey, M. D. Currigan.

GENITO-URINARY SURGERY: T. L. Howard.

GYNECOLOGY: G. L. Monson, S. Williams.

OPHTHALMOLOGY: E. E. McKeown, D. G. Monaghan.

OTO-LARYNGOLOGY: T. E. Carmody.

CLINICAL STAFF OF THE UNIVERSITY HOSPITAL, BOULDER

MEDICINE: O. M. Gilbert; SURGERY: C. E. Giffin; OBSTETRICS AND GYNECOLOGY: W. W. Reed; EYE, EAR, NOSE AND THROAT: F. R. Spencer; ANAESTHETIST: M. E. Miles; ROENTGENOLOGIST: C. E. Giffin; BACTERIOLOGIST: C. T. Burnett; BIOCHEMIST: R. C. Lewis; CLINICAL PATHOLOGIST: J. C. Todd; PATHOLOGIST: R. C. Whitman.

CLINICAL STAFF OF THE DISPENSARY

MEDICINE: R. T. Ramsey, Chief; A. L. Beaghler, H. H. Champlin, B. C. Dorset, L. W. Frank, W. W. Jones, F. C. Kennelley, T. R. Love, L. K. Lunt, H. G. Macomber, A. Minnig, J. L. Mortimer, J. J. Waring, J. C. Weld, A. R. Lannon.

PEDIATRICS: Frank P. Gengenbach, Chief; G. H. Cattermole, B. C. Dorset, F. C. Kennelley, L. C. Wollenweber.

TUBERCULOSIS: J. Gelien, Chief; A. Minnig.

SURGERY: O. M. Shere, Chief; A. C. Craig, S. B. Eichberg, H. G. Garwood, C. D. McKenzie, Frank Rogers, N. A. Thompson.

GENITO-URINARY SURGERY: O. Lyons, J. B. Davis, J. A. Philpott, R. G. Smith.

ORTHOPEDICS: C. G. McEachern, R. G. Packard, C. M. Spicer, H. W. Wilcox.

NEUROLOGY AND PSYCHIATRY: G. E. Neuhaus, Chief; E. Delehanty, G. A. Moleen, C. L. Pershing, C. S. Bluemel.

GYNECOLOGY: W. A. Jayne, Chief; F. H. Cary, C. A. Ferris, M. E. V. Fraser, E. W. Perrott.

OBSTETRICAL OUTSERVICE: C. A. Ferris, F. H. Cary, Chiefs; P. M. Chase, A. R. Lannon, G. B. Lewis, H. G. Macomber, H. W. Stuver, E. W. Perrott.

OPHTHALMOLOGY: H. Aufmwasser, E. T. Boyd, W. H. Crisp, C. O. Eigler, W. C. Finnoff, J. A. McCaw, W. A. Sedwick, H. R. Stillwill.

OTO-LARYNGOLOGY: W. C. Bane, W. M. Bane, H. L. Baum, C. E. Cooper, F. R. Spencer.

DERMATOLOGY AND SYPHILIS: A. J. Markley, Chief; G. P. Lingelfelter.

Temporary War Service Appointments.

OBSTETRICAL OUT SERVICE: W. J. Bingham, *J. E. Wilson, C. N. Needham, Minnie C. T. Love.

GYNECOLOGY: *J. E. Wilson, C. N. Needham, Minnie C. T. Love, W. J. Bingham.

* Died October 25, 1918.

GENERAL STATEMENT

HISTORICAL NOTE

The University of Colorado School of Medicine was opened in September, 1883. On January 1, 1911, the Denver and Gross College of Medicine was united with this School, the two faculties being combined into one. The single school thus formed is an integral part of the University of Colorado. At the same time the third and fourth-year classes were transferred to Denver, where greatly enlarged clinical facilities are available. The Denver and Gross College of Medicine was the union June 19, 1902, of the Denver College of Medicine, a department of the University of Denver, and the Gross Medical College. The former College was opened November, 1881, and the latter in 1887. The School is a member of the Association of American Medical Colleges.

The first two years constitute the Boulder Division of the School, and the last two years, the Denver Division.

ORGANIZATION

The work of the School is divided among fourteen departments, each in charge of a Professor who is Head of the Department, containing in addition an appropriate number of associate and assistant professors, lecturers, instructors, assistants and members of the Hospital and Dispensary Staffs. The Heads of Department with the Dean constitute the Executive Faculty, having jurisdiction under the President and Board of Regents of the University.

EQUIPMENT

The first two years are given at Boulder in the Medical Building on the University Campus, where the University Hospital affords facilities for such clinical instruction as is given during the latter part of the second year. The last two years are given in Denver, where the Medical Building houses the dispensary and lecture rooms.

Operative and bedside clinics and clinical conferences are held daily at the Denver City and County Hospital, 400 beds. The Hos-

pital clinics are so arranged that small groups of students have an opportunity to study and observe the cases intimately, under the direction of the proper members of the faculty. The School also maintains a dispensary where daily clinics are attended by small groups of students in Medicine; Pediatrics; Neurology; Tuberculosis; Surgery; Gynecology; Orthopedics; Eye; Ear, Nose and Throat; Dermatology and Genito-Urinary Surgery; and the Clinical Laboratory. There are more than 20,000 visits yearly to the Dispensary. In addition to these, clinics are held for small groups of students at St. Joseph's Hospital, 200 beds, and the Contagious (Steele) Hospital. Clinical facilities are also provided at the Children's Hospital.

There is abundant material for teaching obstetrics, each member of the senior class being required to attend a minimum of six cases, in addition to seeing cases delivered by members of the faculty. Students who desire to do so may attend a much larger number of cases.

Library facilities in Boulder are afforded by the University Library, supplemented by the Denison Library. In Denver, students have free access to the Library of the Medical Society of the City and County of Denver, containing 18,523 bound volumes and 210 current journals.

THE HENRY S. DENISON RESEARCH LABORATORIES

The Henry S. Denison Research Laboratories, together with the Denison Memorial Building, are the gift of Mrs. Ella Strong Denison in memory of her son, Dr. Henry S. Denison, who was a member of the Medical Faculty. The west wing of the building is now completed. It contains special rooms and equipment for research and advanced work in chemistry, physiology, pathology, bacteriology, and clinical medicine, together with the necessary accessory rooms, such as library, cold room, incubator room, operating and sterilizing rooms, dark room, etc. To all who have the necessary educational prerequisites, opportunity is here offered for special work and research.

REVENUES

The revenues of the School are appropriated under a budget system from the general funds of the University. Student fees contribute a small proportion of the total budget.

REQUIREMENTS FOR ADMISSION

See pages 26, 30.

SPECIAL STUDENTS

See page 30.

ADVANCED STANDING

Candidates from a medical college on the accepted list must present to the Registrar of the University at the time of matriculation satisfactory credentials showing that the entrance requirements enforced for students of the class to which entrance is sought have been complied with, and that all the work in which advanced credit is sought has been completed. Students from schools rated in grade "B" are admitted only after passing examinations. Students from schools rated in class "C" are not eligible to advanced standing.

Applicants for advanced standing who have not attended a medical school during the preceding five years must stand examinations in the subjects in which credit is sought.

The School will cooperate in adjusting so far as possible difficulties arising from differences in the arrangement of the curriculum. The responsibility for making these adjustments rests finally, however, with the student, who is expected to make satisfactory arrangements with the instructors concerned. See also page 26.

COURSES LEADING TO TWO DEGREES

A seven-year course leading to the degrees of A.B. and M.D. is offered. The student pursues the regular work of the College of Liberal Arts for three years and then begins his medical studies. The A.B. degree is conferred upon the completion of the first year of Medicine.

REQUIREMENTS FOR A DEGREE

Every candidate for the degree of Doctor of Medicine must be twenty-one years of age, possess a good moral character, and be of temperate habits. He must have passed satisfactory examinations in all the required studies included in the full course of instruction. He must have attended regularly four full courses of lectures of not less than thirty-two weeks each, in some accredited medical

college. No two of such courses shall have been taken in the same year. The last course must be taken in this School. An allowance for absence will be made for no other cause than the illness of the student or of his immediate family, and such absence from any course must not exceed twenty percentum of the scheduled hours.

FEES

For fees, see pages 33, 35.

SCHOLARSHIPS AND LOAN FUNDS

THE EDWARD G. STOIBER SCHOLARSHIP

The Edward G. Stoiber Scholarship Fund consists of the principal sum of \$2,000 held in trust, the income of which is given each year to some student in the School of Medicine, designated by the donor or by the officers of the School. This scholarship was established in The Denver and Gross College of Medicine by Mrs. Edward G. Stoiber in memory of the late Edward G. Stoiber. Under the terms of the merger agreement between The Denver and Gross College and the University of Colorado this fund has been transferred to the Regents, to be held in perpetuity for the purposes specified.

THE PHIPPS LOAN FUND

The Phipps Loan Fund of \$5,000 was established in 1918 by Mr. L. C. Phipps, and Mr. L. C. Phipps, Jr. Several loans are available from it each year for the benefit of promising students of the second, third, or fourth years in need of such assistance to enable them to continue their medical education.

DESCRIPTION OF COURSES*

FIRST YEAR (AT BOULDER)

ANATOMY, HISTOLOGY, AND EMBRYOLOGY

Anatomy is taught by means of lectures, recitations, drawings, and demonstrations upon the cadaver. Work in the dissecting room is prosecuted under the personal supervision of the professor and demonstrators of anatomy. Every facility and encouragement is given the student to pursue work in the anatomical room beyond the requirements of the prescribed course. The anatomical material is furnished free.

1. GROSS ANATOMY. Autumn and winter quarters. 334 h.

Complete dissection of the human body supplemented by lectures and recitations. Acting Professor Wallin.

2. MICROSCOPIC ANATOMY. Autumn and winter quarters. 360 h.

A combined course in embryology, histology and the anatomy of the central nervous system. Lectures, recitations and laboratory exercises. The laboratory work consists of a study of frog, chick, pig, rat and human embryos, special preparations illustrating histogenesis and organogenesis, adult tissues, dissection of the brain, microscopic preparations of the brain, cord and sense organs. Doctor Kingery.

BACTERIOLOGY

1. GENERAL BACTERIOLOGY. Spring quarter. 154 h.

Lectures, recitations, and laboratory work on the chemistry and biology of bacteria, classification, methods of isolation, culture and staining; phenomena of infection, and cultural characteristics of the pathogenic organisms. Some time is also devoted to the methods of water and milk analysis, and the identification of cultures.

This entire course is open to students of other departments, or the didactic work alone may be taken upon consultation with the head of the department.

Professor Burnett and Assistant.

* The hours indicated after each course show the total time devoted to the course.

PHYSIOLOGY

1. PHYSIOLOGY. Winter quarter. 88 h.

Lectures, recitations, laboratory exercises and demonstrations on the physiology of the cell, the muscle and the nerve, and the central nervous system. Credit will be given only after the completion of the following course.

Professor Gruber.

2. PHYSIOLOGY. Spring quarter. 220 h.

Lectures, recitations, laboratory exercises and demonstrations on the physiology of the autonomic nervous system, special senses, blood and lymph, circulation, respiration, digestion and secretion including the excretory organs, metabolism, nutrition and heat regulation, the endocrine organs and reproduction.

Professor Gruber.

SECOND YEAR (AT BOULDER).

ANATOMY

1. APPLIED ANATOMY. Spring quarter. 132 h.

Lectures and laboratory exercises consisting of a study of cross sections of the human body and special preparations including stereoscopic roentgenograms of the vascular system.

Professor Gillaspie.

BIOCHEMISTRY

1. BIOCHEMISTRY. Autumn quarter. 228 h.

Lectures, recitations, and laboratory exercises on the chemistry of carbohydrates, fats and proteins; of salivary, gastric, pancreatic and intestinal digestion; of bile, putrefaction products, feces; of epithelial, connective, muscular and nervous tissues; of blood, milk, and urine. Considerable time is devoted to practical qualitative and quantitative methods of analysis of urine, milk, stomach contents, and blood, and to practical work in metabolism.

Professor Lewis and Assistant.

PATHOLOGY

1. **GENERAL PATHOLOGY.** Autumn and winter quarters. 82 h.
Lectures and recitations on the causes, nature, and course of disease processes. Professor Whitman.
2. **LABORATORY COURSE.** Autumn and winter quarters. 164 h.
Study of the pathologic histology of disturbances of circulation, the degenerations, inflammation, tissue regeneration, the specific infections, tumors, etc. by means of stained sections given to the class as unknowns to be analyzed and diagnosed. The sections become the property of the student. Professor Whitman.

HYGIENE

1. **HYGIENE AND PREVENTIVE MEDICINE.** Autumn quarter. 60 h.
Recitations based on a standard text on public and personal hygiene, epidemiology, and preventive medicine. Professor Burnett.

BACTERIOLOGY

1. **ADVANCED BACTERIOLOGY.** Hours as arranged. An optional course, open to a limited number.
Practice in bacteriologic examination of water, milk, food, soil, air; determination of vital resistance, efficiency of antiseptics; methods of bacteriologic diagnosis of typhoid fever, diphtheria, tuberculosis, etc. To such students as are qualified, special problems are assigned for investigation. Professor Burnett.

PHARMACOLOGY

1. **PHARMACOLOGY, MATERIA MEDICA, AND TOXICOLOGY.** Winter and spring quarters. 176 h.
Lectures, recitations and laboratory experiments on the physiologic action, toxicology, and therapeutics of important drugs. Professor Gruber.

CLINICAL PATHOLOGY

1. **CLINICAL PATHOLOGY.** Winter quarter. 176 h.
Recitations and laboratory drill on technique and interpretation of the results of clinical examination of sputum, blood, urine, stomach contents, feces, and pathologic secretions and excretions. Professor Todd.

MEDICINE

1. **PRINCIPLES OF MEDICINE.** Spring quarter. 55 h.

Lectures and clinical exercises on the nature of disease processes, the fundamental principles of differential diagnosis, and methods of physical examination.

Associate Professor Gilbert.

SURGERY

1. **PRINCIPLES OF SURGERY.** Spring quarter. 55 h.

Lectures, recitations and clinical exercises on wounds and healing of wounds, infection, inflammation, necrosis, surgical tuberculosis, bandaging, etc.

Dr. Giffin.

THIRD YEAR (AT DENVER)**MEDICINE**

1. **THEORY AND PRACTICE.** Three quarters. 160 h.

Lectures, recitations and reports covering the subject of internal medicine.

Professor Meader, Doctor Sewall and Doctor Waring.

2. **CLINICAL MEDICINE.** Three quarters. 46 h.

A series of clinics at the County Hospital upon patients from the medical wards.

The Medical Staff.

3. **PEDIATRICS.** Winter quarter. 33 h.

Lectures and recitations on infant feeding and the important diseases of childhood.

Associate Professor Gengenbach.

4. **CLINICAL THERAPEUTICS.** Spring quarter. 33 h.

Lectures and recitations on the application of the principles of pharmacology to specific therapeutic problems.

Associate Professor Kleiner.

5. **PHYSICAL DIAGNOSIS.** Any quarter. 30 h.

Clinical exercises with small groups of students on the recognition and interpretation of abnormal signs.

Doctors Barney and Kennelly.

6. **PATHOLOGICAL PHYSIOLOGY.** Autumn quarter. 12 h.

Lectures on perverted action and function of diseased organs.
Emeritus Professor Van Zant.

7. **CASE TAKING.** Any quarter. 30 h.

Practical history taking by small groups of students in the Dispensary.
The Dispensary Staff.

NEUROLOGY

1. **PRINCIPLES OF NEUROLOGY.** Autumn quarter. 36 h.

Lectures reviewing the anatomy and physiology of the central nervous system, its symptomatology, and neurologic methods.

Professor Neuhaus.

2. **NEUROLOGIC DIAGNOSIS.** Any quarter. 30 h.

Practical exercises for small groups of students in history taking, and physical examination of neurologic patients, and the physiological interpretation of neurologic signs and symptoms. Instruction is also given in the diagnostic and therapeutic use of electricity.

Doctor Pershing or Doctor Tepley.

3. **PATHOLOGICAL PSYCHOLOGY.** Winter quarter. 22 h.

Lectures on the fundamental laws of psychology as applied to the relation of physician and patient, and to diseased states, psychanalysis, etc.

Professor Neuhaus.

SURGERY

1. **MINOR SURGERY.** Autumn and winter quarters. 46 h.

Lectures on the surgery of the bones and joints, and the minor surgical operations.

Assistant Professor Dean and Doctor Shere.

2. **SURGICAL PATHOLOGY.** Winter quarter. 33 h.

Lectures and laboratory.

Doctor Shere and Doctor Hegner.

3. **ORTHOPEDICS.** Spring quarter. 22 h.

Clinical lectures on the more important orthopedic conditions.

Associate Professor Jones.

4. GENITO-URINARY SURGERY. Spring quarter. 33 h.
Lectures.

Associate Professor Lyons.

5. ROENTGENOLOGY. Spring quarter. 22 h.

Lectures and demonstrations on the diagnostic and therapeutic use of the Roentgen ray and on the interpretation of skiagrams.

Associate Professor Childs.

6. CLINICAL SURGERY. Three quarters. 46 h.

A series of clinics at the County Hospital on patients from the surgical wards.

The Surgical Staff.

OBSTETRICS AND GYNECOLOGY

1. NORMAL OBSTETRICS. Autumn quarter. 48 h.

Lectures on the physiology, diagnosis, and management of normal pregnancy, labor, and the puerperium.

Doctor Cary.

2. PATHOLOGICAL OBSTETRICS. Winter quarter. 33 h.

Lectures on the pathology, diagnosis, and treatment of the complications of pregnancy.

Doctor Ferris and Doctor Cary.

3. MANIKIN COURSE. Any quarter. 30 h.

The class is divided into small groups for practical exercises on the manikin, and practice in gynecological and obstetrical diagnosis, accompanied by lectures and recitations.

Doctor Ferris.

4. GYNECOLOGY. Spring quarter. 33 h.

Lectures.

Doctor Ferris.

OPHTHALMOLOGY

1. OPHTHALMOLOGY. Winter quarter. 33 h.

Lectures and recitations on errors of refraction and ocular movements, and the common injuries and diseases of the eye.

Professor Jackson.

2. DEMONSTRATION. Any quarter. 10 h.

Demonstrations to small sections of the class on methods of diagnosis, ophthalmoscopy, etc., with lectures and recitations on normal optics.

Professor Jackson and Assistants.

OTO-LARYNGOLOGY

- 1. OTO-LARYNGOLOGY. Autumn quarter. 36 h.
Lectures on diseases of the ear, nose, and throat.
Professor Levy.
- 2. DEMONSTRATIONS. Any quarter. 20 h.
The class is divided into small groups for lectures and quizzes on the anatomy and physiology of the ear, nose, and throat, and for practical diagnostic exercises in the use of the otoscope, laryngoscope, rhinoscope, etc.
Professor Levy and Assistants.

DERMATOLOGY

- 1. DERMATOLOGY. Spring quarter. 33 h.
Lectures on the commoner diseases of the skin, and syphilis.
Professor Markley.

PATHOLOGY

- 1. SPECIAL PATHOLOGY. Three quarters. 62 h.
Lectures and laboratory demonstrations on pathological conditions and disease processes of the more important organs and organ systems.
Doctor Mugrage.
- 2. IMMUNITY AND SPECIAL PATHOLOGY. Three quarters. 93 h.
Lectures, recitations, and laboratory demonstrations on the phenomena of immunity, and their application to diagnosis and treatment. The course also includes practical laboratory exercises on tumor diagnosis.
Doctor Mugrage.

FOURTH YEAR (AT DENVER)

CLINICAL INSTRUCTION

Clinical instruction is given in three forms, namely, amphitheater clinics, clinical clerkships, and dispensary clinics. Students are given every facility compatible with the welfare of the patient, for direct personal study of the patient.

GENERAL CLINICS are held from 8:00 to 9:00 at the County Hospital, as follows:

	Hours per Year.
Medicine	48
Surgery	48
Neurology and Psychiatry	32
Pediatrics	32

The hours from 9:00 to 11:00 a. m. are assigned to Clinical Clerkships. In this capacity the students are apportioned among the various departments of the County Hospital and carry on their studies of patients under the direct supervision of members of the Visiting Staff.

The hours spent in each department are approximately as follows:

	Hours.		Hours.
Medicine	96	Ear, Nose, and Throat.....	19
Surgery	96	Gross Pathology	26
Neurology and Psychiatry...	48	Pediatrics	32
Orthopedics	32	Contagious Diseases	19
Genito-Urinary Diseases	19	Ophthalmology	19
Dermatology	19	Tuberculosis	32
		Obstetrics	48

OBSTETRICS. Each student is required to personally attend a minimum of six cases, and may, if he desires, attend a much larger number.

DISPENSARY CLINICS are conducted in the following departments: Medicine; Pediatrics; Surgery; Neurology; Gynecology; Eye; Ear, Nose and Throat; Dermatology and Genito-Urinary Surgery; Tuberculosis, and the Clinical Laboratory.

The class is divided into nine sections. Each section spends one and one-half hours daily for three and one-half weeks in each of the above departments. All cases are studied by the students under the immediate supervision of members of the Dispensary Staff.

The didactic teaching of the fourth year is as follows:

MEDICINE

1. CASE TEACHING. Three quarters. 33 h.

Associate Professor Gilbert.

2. CASE TEACHING IN PEDIATRICS. Winter and spring quarters. 22 h.

Professor Gengenbach.

3. DIETETICS. Autumn quarter. 12 h.

Lectures on the application of the chemistry and physiology of metabolism to clinical problems.

Doctor Love.

NEUROLOGY AND PSYCHIATRY

1. **NEUROLOGY AND PSYCHIATRY.** Three quarters. 66 h.

Lectures on psychiatry, the psycho-neuroses, and the principles of psycho-therapy; and the organic diseases of the peripheral nerves, spinal cord, and brain.

Associate Professor Pershing and Assistant Professors Delehanty and Moleen.

SURGERY

1. **LECTURES.** Three quarters. 99 h.

Tumors and injuries of the abdomen, surgery of the breast, amputations, surgery of the intestines, liver, spleen, and pancreas, and surgery of the head, neck, and rectum.

Professors Freeman and Lyman and Asst. Professor Buchtel.

2. **OPERATIVE SURGERY.** Autumn and winter quarters. 33 h.

Small sections of students are taught by actual practice upon the dog and cadaver, under the supervision of the instructor, the principles and technique of the more important operations.

Doctors Shere and Hegner.

3. **MILITARY SURGERY.** Spring quarter. 11 h.

Lectures.

Doctor Grant.

4. **ANAESTHESIA.** Autumn quarter. 11 h.

Lectures.

Doctor Charles.

5. **LOCAL ANAESTHESIA.** Winter quarter. 6 h.

Lectures.

Doctor Fowler.

MEDICAL JURISPRUDENCE

1. **LECTURES.** Winter quarter. 33 h.

Mr. James H. Pershing.

MILITARY HYGIENE AND ADMINISTRATION

1. **LECTURES.** Winter and spring quarters. 44 h.

Lt. Col. John R. Barber, M.C., U. S. A.

MEDICAL ETHICS AND HISTORY OF MEDICINE

1. **TALKS BY VARIOUS MEMBERS OF THE FACULTY.** Spring quarter. 11 h.

SUMMARY OF COURSES FOR 1918-1919

FIRST YEAR:	Lect.	Lab.	Clin.	Tot.
Anatomy	104	230	..	334
Histology and Embryology....	81	279	..	360
Physiology	77	231	..	308
Bacteriology	44	110	..	154
	306	850	..	1,156
SECOND YEAR:				
Anatomy	33	99	..	132
Biochemistry	72	156	..	228
Pathology	82	164	..	246
Hygiene	55	..	..	55
Pharmacology	77	99	..	176
Surgery	55	..	..	55
Medicine	55	..	..	55
Clinical Pathology	55	121	..	176
	484	639	..	1,123
THIRD YEAR:				
Dermatology	33	..	..	33
Genito-Urinary Diseases ...	33	..	..	33
Gynecology	33	..	..	33
Medicine	172	..	106	278
Neurology	58	..	30	88
*Obstetrics	81	..	30	111
Ophthalmology	33	..	10	43
Orthopedics	22	..	..	22
Oto-laryngology	36	..	20	56
Pathology	93	62	..	155
Pediatrics	33	..	..	33
Röntgenology	22	..	..	22
Surgery	79	..	46	125
Therapeutics	33	..	..	33
	761	62	242	1,065
FOURTH YEAR:				
Dermatology .....	..	..	38	38
Dietetics	12	..	..	12
Genito-Urinary Surgery .....	..	..	38	38
Gynecology .....	..	..	26	26
Medicine	33	..	175	208
Medical Ethics and History...	11	..	..	11
Medical Jurisprudence	33	..	..	33
Military Hygiene and Sanita- tion	44	..	..	44
*Obstetrics .....	..	..	48	48
Ophthalmology .....	..	..	50	50
Orthopedics .....	..	..	46	46
Oto-laryngology .....	..	..	50	50
Pathology .....	..	..	26	26
Pediatrics	22	..	62	84
Surgery	127	..	160	287
	282	..	719	1001
RECAPITULATION:				
First year	306	850	..	1,156
Second year	484	639	..	1,123
Third year	761	62	242	1,065
Fourth year	282	..	719	1,001
Totals	1,833	1,551	961	4,345

* Does not include time spent in personal conduct of out-patient cases.

UNIVERSITY OF COLORADO HOSPITAL

GENERAL STATEMENT

The University Hospital is situated on ground adjacent to the Main Campus. The main hospital is equipped for the care of medical, surgical and obstetrical cases; there is a separate building for the care of contagious cases. In the wards and private rooms there are accommodations for seventy-five patients.

Any reputable physician may bring his patients to the hospital for care, on payment of the established fees. Students of the University are cared for at a discount from the usual fees, and it has often been found of great advantage to them when sick away from home.

HOSPITAL BOARD

CHARLES N. MEADER, A.B., M.D., Chairman.

ROBERT C. LEWIS, Ph.D., Secretary.

VALENTINE B. FISCHER, M.D.

OSCAR M. GILBERT, M.D.

WALTER W. REED, M.D.

JAMES C. TODD, M.D.

FRANK H. WOLCOTT, A.B.

MARTHA M. RUSSELL, R.N.

ADMINISTRATIVE STAFF

MARTHA M. RUSSELL, R.N., Superintendent.

LUCINDA MARTIN, R.N., Surgical Supervisor.

OLIVE B. McMULLEN, R.N., Night Supervisor.

MINNA A. STONER, B.S., Dietitian and Business Supervisor.

UNIVERSITY OF COLORADO TRAINING SCHOOL FOR NURSES

FACULTY

- GEORGE NORLIN, Ph.D., President of the University.
CHARLES N. MEADER, A.B., M.D., Dean of the School of Medicine.
MARTHA M. RUSSELL, R.N., Superintendent of the Hospital; Practical Nursing, Ethics of Nursing.
CLOUGH T. BURNETT, M.D., Bacteriology.
JAMES C. TODD, Ph.B., M.D., Clinical Pathology.
*CARBON GILLASPIE, M.D., Anatomy.
*HOMER C. WASHBURN, B.S. (Phar.), Materia Medica.
ROBERT C. LEWIS, Ph.D., Chemistry.
OSCAR M. GILBERT, M.D., Medical Diseases.
*GEORGE H. CATTERMOLLE, M.D., Diseases of Children.
FRANCIS J. PERUSSE, B.Sc., Pharmacology.
*FRANK R. SPENCER, M.D., Eye, Ear, Nose, and Throat Nursing.
WALTER W. REED, M.D., Gynecology and Obstetrics.
VALENTINE B. FISCHER, A.B., M.D., D.Oph., Diseases of Eye, Nose, and Throat.
MARTIN E. MILES, M.D., Preventable Diseases.
*WILLIAM A. JOLLEY, M.D., Red Cross and Military Nursing.
LUCINDA MARTIN, R.N., Surgical Nursing.
MINNA A. STONER, B.S., Medical and Practical Dietetics.
JOSEPH COLE, Röntgenology.

GENERAL STATEMENT

The Training School for Nurses of the University of Colorado, established in 1898, offers a thorough course of instruction to young women who desire to enter the profession of nursing.

The requirements for admission are the same as for the College of Liberal Arts of the University. The candidates must be graduates of an accredited high school and present fifteen acceptable units. Applications from candidates who have completed an equivalent amount of work under other conditions will be considered on the merits of each case.

* On leave of absence for war service.

Candidates are received on probation for three months; during this period they receive room, board and a reasonable amount of laundry service. If their theoretical and practical work proves satisfactory they become members of the school.

Until October, 1921, an allowance of \$8.00 per month is given to each pupil to cover the expense of uniforms, textbooks, and incidentals. An annual vacation of two weeks is given to each pupil.

Class work is accommodated to the schedules of the University, nearly all being given in the months between September and May. The students are on duty about 56 hours per week.

The College of Liberal Arts of the University has cooperated with the Training School for Nurses in organizing a course of study leading to the degree of B.S. and a nurse's diploma; so that a young woman may complete a cultural and professional training in the five year-period allotted to this work.

Every candidate for graduation must have completed the required theoretical and practical work and have been a member of the training school for three years, or have been admitted to advanced standing because of previous satisfactory work in an approved college in the sciences on which nursing is based.

Any additional information desired will be sent on application to the Superintendent of the University Hospital, Boulder, Colorado.

COURSE OF STUDY

FIRST YEAR		SECOND YEAR	
Practical Dietetics	*20	Medical Diseases	30
Anatomy	30	Surgical Technique	12
Physiology	30	Obstetrics	30
Bacteriology	30	Pediatrics	20
Chemistry	36	History of Nursing	10
Personal Hygiene	20	Materia Medica	30
Practical Nursing	64	Communicable Diseases	10
Drugs and Solutions	20	Clinical Pathology	10
Nursing Ethics	10	Eye, Ear, Nose and Throat	10
Massage	10		
	270		162
THIRD YEAR			
Mental and Nervous Diseases	10		
Gynecology	20		
Professional Problems	20		
X-ray Lectures	8		
Public Sanitation	10		
Medical Dietetics	10		
			78

Electives, about 50 hours:
Psychology, Economics, Social Welfare.
* Actual hours.

SCHOOL OF LAW

FACULTY AND LECTURERS

FACULTY

GEORGE NORLIN, Ph.D., President of the University.

JOHN D. FLEMING, A.B., LL.B., LL.D., Dean; Charles Inglis Thomson Professor of Law.

JOHN CAMPBELL, A.M., LL.B., LL.D., Dean, Emeritus.

ALBERT A. REED, LL.B., Professor of Law, Emeritus.

*FRED G. FOLSOM, A.B., LL.B., Professor of Law.

WILLIAM R. ARTHUR, A.B., LL.B., Professor of Law.

HERBERT S. HADLEY, A.B., LL.B., LL.D., Professor of Law.

EDWIN W. PATTERSON, A.B., LL.B., Professor of Law.

LECTURERS

ROBERT S. MORRISON, Lecturer on Law of Mines and Mining.

*WILLARD J. WHITE, A.M., M.D., Lecturer on Medical Jurisprudence.

JAMES W. MCCREERY, Lecturer on Law of Irrigation and Water Rights.

JOHN E. ROBINSON, Lecturer on Bankruptcy.

HARRY S. SILVERSTEIN, A.B., Lecturer on Criminal Procedure.

HENRY E. LUTZ, LL.B., Lecturer on Equity Pleading and Practice.

JOHN H. FRY, LL.B., Lecturer on Auxiliary Code Remedies.

ARTHUR W. FITZGERALD, A.B., LL.B., Lecturer on Conveyancing and Abstracts.

* On leave of absence for war service.

GENERAL STATEMENT

HISTORY

The School of Law was organized in 1892. The course of study occupied two years until 1898 when it was increased to three years. In 1912 the entrance requirements were advanced to include two years of college work in addition to the high-school education previously prescribed. It has been a member of the Association of American Law Schools since the first annual meeting of the Association in 1901.

BUILDING

The Simon Guggenheim Law Building, erected in 1909, contains lecture and classrooms, professors' rooms, moot and practice court rooms, and rooms for the library. It is the gift of Honorable Simon Guggenheim, formerly United States Senator from Colorado.

THE CHARLES INGLIS THOMSON PROFESSORSHIP

Mrs. Olivia Thomson, lately deceased, has given by will for use of the School of Law the sum of \$75,000, the proceeds of which are used to support, in memory of her husband, a professorship known as "The Charles Inglis Thomson Professorship of Law."

THE LIBRARY

The University Library is open to students of all departments.

The Law Library contains 9,646 volumes embracing many sets of state reports, the National Reporter System, all the reports of the Annotated Series, the digests, including the Century, all the encyclopedias, many original English Reports, the English Reports Full Reprint, digests, and statutes, U. S. departmental reports, and a carefully selected collection of textbooks, and is increased each year under special appropriations by the Regents. Most of the leading law journals, American and English, are regularly taken and are on file. The Law Library is under the supervision of an experienced librarian and assistant, and is open to the students from 8:00 A.M. to 10:00 P.M. on week days.

An accession of one thousand volumes, chiefly reports, from the library of the late Judge C. I. Thomson, the gift of his widow, has been lately made. The volumes are known and catalogued as the "C. I. Thomson Collection."

REQUIREMENTS FOR ADMISSION

See pages 26, 30.

ADVANCED STANDING

Students if otherwise entitled to admission as regular students will be admitted to advanced standing in the second or third year only upon presentation of satisfactory certificates of the completion of equivalent subjects in another law school of equal rank. Such applicants may also in the discretion of the faculty be required to undergo an examination in any or all subjects of the first or second year.

SPECIAL STUDENTS

See page 31.

FEES

For fees, see pages 33, 35.

DEGREE OF BACHELOR OF LAWS

The degree Bachelor of Laws will be conferred on students who have met the entrance requirements for candidates for the degree and who have satisfactorily completed the three-year curriculum in accordance with the regulations established by the faculty. The time allowance may be proportionally reduced for those who enter with advanced standing, but the candidate for a degree must have pursued at least one year's course as a resident student. No degree will be conferred until the candidate shall have reached the age of twenty-one years.

METHOD OF INSTRUCTION

What is known as the Case-system, or the study of the principles of law as illustrated in judicial opinion, is followed with the view of arriving at such principles by the process of inductive reasoning.

TEACHING PRACTICE

As thorough a course as circumstances will allow in court practice and procedure is deemed an essential part of the curriculum. To supply a knowledge of this, a Practice Court has been provided in which the records and files are kept and the proceedings conducted in conformity with the usage and practice in the courts of Colorado.

It is intended that each student shall participate in the conduct to final judgment of at least two cases in each of the second and third years of his course.

SOLDIERS AND SAILORS

Upon the entry of the United States into the war the following resolution of the faculty received the approval of the regents:

For the period of the war honorably discharged soldiers and sailors of the United States, of the age of 21 years, will be admitted as candidates for the degree of Bachelor of Laws, who, being of good moral character, furnish satisfactory evidence of their war service, and who fulfill the entrance requirements of the College of Liberal Arts, as given in detail on page 27, being substantially fifteen acceptable units, or their equivalent, of a standard four-year high or preparatory school.

In view of the unexpected cessation of hostilities, the following additional resolution was approved for the school year, 1918-1919:

Soldiers and sailors who have been honorably discharged after six months of service may, provided they have successfully completed the training of a standard high-school course, be admitted to the School of Law, and after admission will be admitted to candidacy for a degree upon the creditable completion of the first year's work.

INSTRUCTION IN OTHER DEPARTMENTS OF THE UNIVERSITY

The instruction given in other departments of the University is open also to students of the School of Law, subject to the approval of the Law Faculty. Among the numerous courses, those upon Political Science and Economics, Geology, Mineralogy, History, Oratory and Debate, are particularly recommended for law students. Students intending to take up the study of law are advised to consult with the Dean in regard to their pre-legal courses.

PRIZES

The American Law Book Company of New York City gives annually a prize of a complete set of "Cyc" with its Annual Annotations to the student of the third-year class who attains the highest scholarship honors for the period of his senior year.

Callaghan and Company, Law Publishers, Chicago, give annually a prize of The Cyclopedic Law Dictionary, one volume, to the student of the second-year class who attains the best general average in his studies for the year.

COURSE OF STUDY

It is the purpose of the School to afford such training in the fundamental principles of the English and American law as will thoroughly prepare the student to practice his profession with credit in any state or country where this law prevails.

Every candidate for the degree Bachelor of Laws is required to take all the subjects of the first year, at least thirteen hours a week in each quarter of the second year, and at least thirteen hours a week in each quarter of the third year. The work of the second and third years must include all subjects preceded by a star in the outline of studies below.

In addition to the above, all students are required to take the Practice Court work, and such special lectures as are provided.

FIRST YEAR

FIRST QUARTER

COMMON LAW PLEADING. 5 h.

Ames' Cases on Pleading (2d ed.); Whittier's Cases on Common Law Pleading.

Professors Patterson and Arthur.

CONTRACTS. 5 h.

Williston's Cases on Contracts, Vols. I and II (1904 ed.)

Professor Arthur.

TORTS. 4 h.

Ames and Smith's Cases on Torts, Vols. I and II (1909-1910 ed.).

Professor Arthur.

SECOND QUARTER

CONTRACTS. 5 h. (Continued.)

Professor Arthur.

PROPERTY. 4 h.

Gray's Cases on Property, Vol. I (2d ed.).

Professor Arthur.

TORTS. 4 h. (Continued.)

Professor Arthur.

THIRD QUARTER

AGENCY. 3 h.

Huffcut's Cases on Agency (2d ed.).

Professor Fleming.

CRIMINAL LAW AND PROCEDURE. 5 h.

Beale's Cases on Criminal Law (3d ed.).

Professor Hadley.

PROPERTY. 4 h.

Gray's Cases on Property, Vol. II (2d ed.).

Professor Arthur.

USE OF LAW BOOKS (with practical exercise). 2 h.

Professor Arthur.

SECOND YEAR

*BILLS AND NOTES. 4 h.

Smith and Moor's Cases on Bills and Notes.

Professor Arthur.

CARRIERS. 3 h.

Beale's Cases on Carriers (2d ed.).

Professor Hadley.

*CIVIL PROCEDURE UNDER THE CODE. 3 h.

Colorado Code of Procedure and Selected Cases.

Professor Folsom, and Mr. Fry.

DAMAGES. 3 h.

Beale's Cases on Damages (2d ed.); and Workmen's Compensation acts.

Professor Hadley.

DOMESTIC RELATIONS. 3 h.

Woodruff's Cases on Domestic Relations (3d ed.).

Professor Hadley.

*EQUITY JURISDICTION. 5 h.

Ames' Cases on Equity, Vol. I.

Professor Patterson.

EQUITY PLEADING AND PRACTICE: Lectures at Appointed Hours.

Mr. Lutz.

*EVIDENCE. 5 h.

Thayer's Cases on Evidence (2d ed.).

Professor Folsom.

INSURANCE. 2 h.

Richard's Cases on Insurance.

Professor Fleming.

PARTNERSHIP. 4 h.

Burdick's Cases on Partnership.

Professor _____.

*PROPERTY. 4 h.

Gray's Cases on Property, Vol. III (2d ed.).

Professor Arthur.

*PROPERTY (WILLS). 4 h.

Costigan's Cases on Wills.

Professor Arthur.

SALES. 4 h.

Williston's Cases on Sales (2d ed.).

Professor Fleming.

THIRD YEAR

*APPELLATE PRACTICE. 2 h.

Colorado Statutes and Selected Cases.

Professors Fleming and Folsom.

BANKRUPTCY. Lectures at Appointed Hours.

Mr. Robinson.

*CONFLICT OF LAWS. 4 h.

Beale's Shorter Selection of Cases on Conflict of Laws.

Professor Fleming.

*CONSTITUTIONAL LAW. 7 h.

Hall's Cases on Constitutional Law.

Professor Fleming.

CONVEYANCING AND ABSTRACTS OF TITLE. 2 h.

Drafting exercises, study of selected abstracts, and title searching.

Mr. Fitzgerald.

*IRRIGATION AND WATER RIGHTS. 3 h.

Bingham's Cases on Water Rights; Selected Cases from Arid States.

Professor Fleming.

LEGAL ETHICS. 2 h.

Costigan's Cases on Legal Ethics.

Professor Hadley.

***MINES AND MINING. 4 h.**

Costigan's Cases on Mining Law.

Professor Fleming.

MORTGAGES. 4 h.

Wyman's Cases on Mortgages.

Professor Arthur.

MUNICIPAL CORPORATIONS. 3 h.

Beale's Cases on Municipal Corporations.

Professor Hadley.

PLEADING AND PRACTICE UNDER THE CODE.

This course covers the work in the Practice Court described above.

Professor Folsom.

***PRIVATE CORPORATIONS. 5 h.**

Warren's Cases on Private Corporation (2d ed.).

Professor Hadley.

PROPERTY. 4 h.

Gray's Cases on Property, Vol. V (2d ed.).

Professor Arthur.

PROPERTY. 4 h.

Gray's Cases on Property, Vol. VI (2d ed.).

Professor Arthur.

PUBLIC UTILITIES. 3 h.

Wyman's Cases on Public Service Companies (2d ed.).

Professor Hadley.

***STATUTES. 2 h.**

A study of some important Colorado Statutes.

Professor Fleming.

SURETYSHIP AND GUARANTY. 3 h.

Ames' Cases on Suretyship and Guaranty.

Professor Folsom.

TRUSTS. 3 h.

Ames' Cases on Trusts.

Professor Folsom.

NOTE—Certain of the courses as outlined for the second and third years have been given to combined classes during the progress of the war, and some combinations of classes, or changes in assignments may be still further necessary in the process of reconstruction.

COLLEGE OF PHARMACY

FACULTY

GEORGE NORLIN, Ph.D., President of the University.

*HOMER C. WASHBURN, B.S. (Phar.), Dean; Professor of Pharmacy.

FRANCIS RAMALEY, Ph.D., Acting Dean; Professor of Botany.

JOHN BERNARD EKELEY, Ph.D., Sc.D., Professor of Chemistry.

†OLIVER C. LESTER, Ph.D., Sc.D., Professor of Physics.

‡CLOUGH T. BURNETT, M. D., Professor of Bacteriology.

ROBERT C. LEWIS, Ph.D., Professor of Biochemistry.

JAY W. WOODROW, Ph.D., Professor of Physics.

CHARLES M. GRUBER, Ph.D., Professor of Physiology and Pharmacology.

PAUL M. DEAN, Ph.D., Assistant Professor of Chemistry.

*CHARLES F. POE, A.M., B.S. (Phar.), Acting Assistant Professor of Pharmacy.

FRANCIS J. PERUSSE, B.Sc., Acting Assistant Professor of Pharmacy.

BESSIE R. GREEN, A.M., Instructor in Botany.

RUSSELL N. LOOMIS, B.S. (Phar.), Instructor in Chemistry.

HORACE B. VAN VALKENBURGH, M.S., Instructor in Chemistry.

*EDWIN D. HULL, M.S., Assistant in Botany.

* On leave of absence for war service.

† On leave of absence, autumn quarter, 1918-1919, for war service.

‡ On leave of absence, February, 1918, to February, 1919, for war service.

GENERAL STATEMENT

ORGANIZATION

The Board of Regents in April, 1911, authorized the establishment of a College of Pharmacy, to be a division of the School of Medicine. In June, 1913, the College of Pharmacy was organized as a separate department. It was opened in September, 1911, and from the beginning has maintained a standard of requirements for entrance and graduation equal to the best schools of pharmacy in the country.

COURSES AND DEGREES

The College offers thorough and practical courses in all subjects pertaining to pharmacy, and fits the student to pursue any of the various branches of the profession. It aims to cooperate with the State Board of Pharmacy and the State Pharmaceutical Association in maintaining a high standard for the profession of pharmacy in Colorado.

The obligation, imposed upon those who manufacture and dispense pharmaceuticals, by an increasing public demand for purer and better drugs and medicines, must result in their employing technically trained assistants for responsible positions which have heretofore, very frequently, been left to irresponsible and incompetent persons.

The operation of state and federal food and drug laws is creating a demand for thoroughly equipped pharmacists, drug inspectors and analysts. Well-trained chemists who also know something of physiology, pharmacology and bacteriology are needed by many manufacturing concerns, hospitals and public institutions, and in the government service. To qualify for such work there is required a general and technical training that can not be gained short of the three-year course in pharmacy, while those preparing for the better positions will need to take the four-year course.

The four-year course of study will appeal to students wishing a strong, well-balanced scientific course which embodies the essentials of a number of sciences but affords specialization along chemical lines. The degree granted, B.S. (Phar.), admits to the Graduate

School so that students who wish still more advanced work may proceed to the A.M. and Ph.D. degrees.

For the present the University continues to offer a two-year course by which the student may prepare for the retail drug business, but even for this kind of work the student is strongly advised to take the regular three years of work leading to the degree of Pharmaceutical Chemist.

The following degrees are conferred upon students who fulfill the entrance requirements and complete the required work:

1. Bachelor of Science in Pharmacy, B.S. (Phar.), on completion of the four-year course, with 185 credit hours.

2. Pharmaceutical Chemist, Ph.C., on completion of the three-year course, with 140 credit hours.

EQUIPMENT

Ample classroom, library and laboratory facilities are provided. The laboratories of Pharmacy, Chemistry, Botany, Physiology, Pharmacology and Bacteriology are all fully equipped with standard apparatus and materials.

REQUIREMENTS FOR ADMISSION

See pages 26, 31.

FEES

For fees, see pages 33, 35.

THE THREE YEAR COURSE, FOR DEGREE PH. C.

A complete schedule is printed on page 247. The exact topics offered may be varied somewhat from year to year but in all cases the subject matter will be distributed essentially as follows:

Subjects	Credit Hours
Chemistry	52
Pharmacy	28
Physics	12
Physiology, Pharmacology and Materia Medica	10
English	9
Botany	9
Pharmacognosy	7
Physical Education or Drill.....	6
Bacteriology	4
Trigonometry	3

THE FOUR YEAR COURSE, FOR DEGREE B. S. (Phar.)

The first three years are the same as for Ph.C., while the fourth year includes economics, pharmacy, chemistry and other approved electives to the amount of 45 credit hours.

THE TWO-YEAR COURSE

Students who can spend only two years in the College of Pharmacy take the regular work of the first year but are allowed some choice of subjects in the second year.

FIRST YEAR

AUTUMN QUARTER		WINTER QUARTER	
PHARMACY	3	PHARMACY	5
CHEMISTRY	5	CHEMISTRY	4
BOTANY	3	BOTANY	3
ENGLISH	3	ENGLISH	3
PHYSICAL EDUCATION OR DRILL	1	PHYSICAL EDUCATION OR DRILL	1
—		—	
15		16	

SPRING QUARTER

PHARMACY	3
CHEMISTRY	5
BOTANY	3
ENGLISH	3
PHYSICAL EDUCATION OR DRILL	1
—	
15	

SECOND YEAR

AUTUMN QUARTER		WINTER QUARTER	
PHARMACY	4	PHARMACY	2
PHARMACOGNOSY	3	PHARMACOGNOSY	2
QUALITATIVE ANALYSIS	3	QUALITATIVE ANALYSIS	3
ORGANIC CHEMISTRY	3	ORGANIC CHEMISTRY	3
PHYSIOLOGY	2	ORGANIC PREPARATIONS	3
*PHYSICAL EDUCATION OR DRILL	1	PHYSIOLOGY	2
—		*PHYSICAL EDUCATION OR DRILL	1
16		16	

* Optional for second-year students in 1919-1920, but required thereafter.

SPRING QUARTER

PHARMACY	4
PHARMACOGNOSY	2
QUALITATIVE ANALYSIS	3
ORGANIC CHEMISTRY	3
TRIGONOMETRY	3
*PHYSICAL EDUCATION OR DRILL	1
	—
	16

THIRD YEAR

AUTUMN QUARTER

PHARMACY	4
PHYSICS	4
QUANTITATIVE ANALYSIS	4
BACTERIOLOGY	4

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WINTER QUARTER

PHARMACY	2
PHYSICS	4
QUANTITATIVE ANALYSIS	4
PHARMACOLOGY AND MATERIA	
MEDICA	3
SANITARY WATER ANALYSIS	2

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SPRING QUARTER

PHARMACY	1
PHYSICS	4
QUANTITATIVE ANALYSIS	4
PHARMACOLOGY AND MATERIA	
MEDICA	3
DRUG ANALYSIS	3

 15

* Optional for second-year students in 1919-1920, but required thereafter.

DESCRIPTION OF COURSES

PHARMACY

1. THEORETICAL PHARMACY. Autumn quarter. 3 h.

Lectures and recitations.

An introductory course in pharmacy consisting of a study of the principles of pharmacy with a sufficient number of demonstrations to illustrate their application. This course also includes pharmaceutical arithmetic.

2. OFFICIAL PHARMACY. Winter quarter. 5 h.

Lectures, recitations and laboratory.

A study of the pharmacopœial and national formulary preparations. The student also makes preparations covering the first half of the United States Pharmacopœia.

3. OFFICIAL PHARMACY. Spring quarter. 3 h.

Recitations.

Continuation of Course 2, but without laboratory work.

4. OFFICIAL PHARMACY. Autumn quarter. 4 h.

Recitations, and laboratory.

A further study of official compounds covering history, methods of preparation, physical and chemical properties. The laboratory work will include the making of a large number of preparations covering the latter half of the United States Pharmacopœia.

5. OFFICIAL PHARMACY. Winter quarter. 2 h.

Recitations.

A continuation of Course 4.

6. PRESCRIPTIONS AND DISPENSING. Spring quarter. 4 h.

Recitations and laboratory.

A detailed study of the prescription and the art of compounding and dispensing.

7. ADVANCED PHARMACY. Autumn quarter. 4 h.

Laboratory.

An advanced course in pharmaceutical technique in which the student prepares a number of preparations of a difficult nature requiring complicated apparatus and chemical synthesis.

8. HISTORY OF PHARMACY. 2 h.

Readings and recitations.

The study of the evolution of modern pharmacy, the work of the various national organizations. Familiarizing the student with prominent men in pharmacy of both the past and the present.

9. COMMERCIAL PHARMACY. 1 or 2 h.

Readings and recitations.

10. PHARMACY SEMINAR. 1 or 2 h.

Readings and consultations.

A review of current pharmaceutical literature.

11. DENTAL AND TOILET PREPARATIONS. 2 to 5 h.

Laboratory.

A study of the bases, the cleansing and antiseptic properties of, and the methods of manufacturing these preparations.

12. DOMESTIC PREPARATIONS. 1 to 2 h.

Laboratory.

A course covering the methods for manufacturing various preparations such as furniture and metal polishes, washing powders, insecticides, disinfectants, etc.

BOTANY

1. COLLEGE BOTANY. Autumn quarter. 3 h.

Recitations, laboratory, and illustrated lectures.

A general course in botany, dealing especially with the higher plants. Morphology, physiology, and microscopic anatomy are treated, with special attention to such structural features and chemical properties of plants as will best prepare the student for his later study of pharmacognosy.

2. ECONOMIC BOTANY. Winter quarter. 3 h.

Recitations, laboratory, and illustrated lectures.

A study of the more important plants and plant products of economic value; grains, seeds, nuts, fruits, vegetables, textile fibers, tea, coffee, spices, crude drugs; technical microscopy; origin and improvement of cultivated plants.

3. ADVANCED ECONOMIC BOTANY. Spring quarter. 3 h.

Lectures and laboratory.

Chiefly the botany of drug plants with study of microscopy of crude drugs.

4. PROBLEMS IN BOTANY OF DRUG PLANTS. 5 h.

Students sufficiently prepared will be directed in botanical investigation of new or little known native drug plants.

For elective courses in Botany the student may consult the schedule of the College of Liberal Arts.

PHARMACOGNOSY

1. PHARMACOGNOSY. Autumn quarter. 3 h.

Recitations and laboratory.

A study of crude and powdered drugs including their history, origin, classification, constitution, and means of identification.

2. PHARMACOGNOSY. Winter quarter. 2 h.

A continuation of Course 1.

3. PHARMACOGNOSY. Spring quarter. 2 h.

Continuation of Course 2.

PHYSIOLOGY AND PHARMACOLOGY

1, 2. HUMAN PHYSIOLOGY. Autumn and winter quarters. 2 h.

Lectures, recitations and demonstrations with laboratory experiments, giving a general knowledge of the structure and functions of the human body.

3, 4. PHARMACOLOGY AND MATERIA MEDICA. Winter and spring quarters. 3 h.

Recitations and lectures.

Physiological and toxicological actions of chemical substances and their therapeutic uses in medicine.

Prerequisites: Physiology, official pharmacy, organic chemistry.

BACTERIOLOGY

1. ELEMENTS OF BACTERIOLOGY. Autumn quarter. 4 h.

Recitations, lectures and laboratory.

An introductory course dealing with general principles and simpler laboratory technique.

Prerequisites: Botany and organic chemistry. Sanitary science is also highly desirable.

CHEMISTRY

1. GENERAL INORGANIC CHEMISTRY.* Three quarters. M. W. F. 10:00. 3 h. Those electing Course 1 must also elect Course 2.

A course of lectures dealing with the laws and theories of Chemistry, together with a study of the elements and their most important compounds.

2. GENERAL INORGANIC CHEMISTRY.* Three quarters. Tu. Th. 8:00 or 1:00. 2 h. This is a laboratory course designed to accompany Course 1.

4. ELEMENTARY QUALITATIVE ANALYSIS. Three quarters. Lectures. M. 11:00; Laboratory, Tu. Th. 9:00 or 1:00. 3 h.

A course in the separation and identification of the more common bases and acids. The lectures deal with the chemistry of the analytical reactions, special emphasis being given to the application of mass-action, ion-product, etc. The course must be continued through at least two quarters.

Prerequisite: Inorganic Chemistry.

6. QUANTITATIVE ANALYSIS. Three quarters. Lectures, Th. 11:00; Laboratory, M. W. F. 9:00 or 1:00. 4 h.

Elementary gravimetric and volumetric analysis, chemical calculations, etc. This course must be continued throughout at least two quarters.

Prerequisite: Course 4, or may be taken with Course 4.

10. ELEMENTARY ORGANIC ANALYSIS. Winter and spring quarters. 3 h.

A course in the separation and identification of pure organic compounds and mixtures, including ultimate organic analysis by combustion, etc.

Prerequisite: Courses 4 and 13.

11. SANITARY WATER ANALYSIS. Any quarter. 8:00 or 1:00. 3 h.

A course in the chemical and bacteriological examination of water with regard to its use for drinking purposes.

Prerequisite: Course 4.

* All students entering the Department of Chemistry and not presenting university credits in general inorganic chemistry must take courses 1 and 2.

13. **ORGANIC CHEMISTRY.** Three quarters. M. W. F. 9:00. 3 h.
Lectures.

A study of the methods of preparation and the properties of the more important organic compounds. Special stress is laid upon the theories underlying the subject and the proofs of the constitution of most of the substances studied.

14. **LABORATORY PRACTICE IN ORGANIC PREPARATIONS.** Winter and spring quarters. M. W. F. 1:00. 3 h.

A laboratory course in the preparation of typical aliphatic and aromatic compounds.

Prerequisite: Course 13, autumn quarter.

15. **PHYSICAL CHEMISTRY.** Three quarters. M. W. F. 11:00. 3 h.

A lecture course presenting the conceptions of the modern physico-chemical theories concerning the states of aggregation of matter, solutions, thermo-chemistry, equilibria, chemical kinetics, electro-chemistry, and actino-chemistry.

16. **PHYSICAL CHEMISTRY.** Three quarters. M. F. 1:00. 2 h.

A laboratory course supplementing Course 15, consisting of the determinations of densities, molecular weights, thermo-chemical and optical constants, conductivity of solutions, electromotive force, transference numbers, viscosity, surface tension, electro-chemical equivalents, transition points, etc.

18. **FOOD ANALYSIS.** Autumn and winter quarters. 8:00 or 1:00. 3 h.

Lectures and laboratory.

A detailed course giving practice in the official and standard methods for the analysis of foods and the detection of adulterants.

Prerequisite: Courses 4 and 13.

19. **DRUG ASSAYING: PHARMACOPOEIAL TESTING.** Autumn and winter quarters. Any three periods. 8:00 or 1:00. 3 h.

A laboratory course giving practice in the official and standard methods for the identification, determination of purity, detection of adulterants and assaying of official drugs.

Prerequisite: Courses 5 and 12.

20. DRUG ASSAYING: ORGANIC ANALYSIS. Autumn and winter quarters. Three periods. 8:00 or 1:00. 3 h.

A laboratory course in the qualitative and quantitative analysis of pharmaceutical and commercial organic products, such as alcohol, ethers, esters, glycerine, soaps, formalin, organic acids, etc.

Prerequisite: Courses 4 and 13.

21. DRUG ASSAYING: ALKALOIDAL ASSAYING. Spring quarter. Any two periods. 8:00 or 1:00. 2 h.

Lecture and laboratory course.

A course consisting of all the most important alkaloidal assays and the separation and detection of the alkaloids.

Prerequisite: Courses 4 and 13.

22. ADVANCED FOOD ANALYSIS. Any quarter. Any three periods. 8:00 or 1:00. 3 h.

An advanced laboratory course in the official and standard methods of food analysis.

Prerequisite: Course 18.

24. ELEMENTARY BIOCHEMISTRY (PHYSIOLOGICAL CHEMISTRY).^{*}
Spring quarter. Lectures. M. W. F. 9:00; Laboratory.
M. W. F. 10:00 to 12:00. 5 h.

This course is designed primarily for students taking the combined College and Hospital Course for the B.S. degree or the Course in Home Economics.

Prerequisite: Course 13.

MICROSCOPICAL CHEMISTRY

1. MICROCHEMICAL ANALYSIS. 3 h.

A study of the use of the microscope and its accessories. Practice in the examination and analysis of inorganic substances, with reference to rapid qualitative methods and the the analysis of minute amounts of material.

2. MICROSCOPICAL EXAMINATION OF FOODS. 3 h.

The microscopical examination of foods and condiments for the purpose of detecting deterioration, adulteration, and admixture.

Prerequisite: Course 1.

^{*} Course 24 is given in the Department of Biochemistry, School of Medicine.

PHYSICS

1. **GENERAL PHYSICS.*** Lectures, two hours. W. F. 11:00; recitations, two hours. 4 h.

a. Mechanics and Sound; autumn quarter. b. Heat and Light; Winter Quarter. c. Electricity and Magnetism; Spring Quarter.

Prerequisite: An elementary knowledge of plane trigonometry.

2. **EXPERIMENTAL PHYSICS.** One three-hour period per week. 1 h.

Quantitative laboratory work in the subjects indicated in Course 1 a, b, c.

Prerequisite: An elementary knowledge of plane trigonometry.

* Course 1 is an elementary but thorough presentation of the fundamental facts, principles, and applications of modern physics. Although the subject matter is divided for convenience into quarters, students are expected to continue the study throughout the year.

The lectures are fully illustrated by apparatus and by experiments. The recitations are based upon both the lectures and a textbook which is studied systematically in parallel with the lectures.

It is strongly recommended that course 2 be taken in parallel with course 1. When not so taken course 1 or its equivalent must precede.

SUMMER QUARTER

FACULTY, 1919

GEORGE NORLIN, Ph.D., President of the University.

MILO G. DERHAM, Ph.D., Director of the Summer Quarter; Professor of Latin.

INSTRUCTORS FROM OTHER INSTITUTIONS

LEE EMERSON BASSETT, A.B., Associate Professor of English, Leland Stanford Junior University.

FLORENCE EUDORA BISHOP, B. Lit., Instructor in Art, West High School, Cleveland, Ohio.

FRANCES E. BOCKIUS, A.B., Instructor in Physical Education, Rockford College.

CALVIN S. BROWN, D.Sc., Ph.D., Professor of Modern Languages and Literatures, University of Mississippi.

ABRAHAM COHEN, Ph.D., Associate Professor of Mathematics, Johns Hopkins University.

E. M. COULTER, Ph.D., Professor of Political Science and Economics, Marietta College.

GASTON DOUAY, A.M., Professor of the French Language and Literature, Washington University.

JOHN ROSS FRAMPTON, M.A., Mus.Bac., Professor of Piano and Organ and Instructor in Harmony, Iowa State Teachers College.

MARY KIDDER, A.M., Institute Supervisor, Mountain Division, American Red Cross.

MILDRED MACARTHUR, Ph.D., Professor of Romance Languages, Drury College.

WALTER E. MCCOURT, A.M., Professor of Geology, Washington University.

LEWIS E. MEADOR, A.M., Professor of History, Drury College.

CHARLES S. MEEK, A.M., City Superintendent of Schools, San Antonio, Texas; Lecturer on Educational Subjects.

HARRY G. PAUL, Ph.D., Associate Professor of English, University of Illinois.

LAURA L. REMER, Ph.B., Critic in Teaching, Iowa State Teachers College.

WILLIAM S. ROE, A.M., Principal of the High School, Greeley, Colo.

WILSON M. SHAFER, A.B., Superintendent of Schools, Cripple Creek, Colorado.

JESSIE RUTH STONE, B.S. in D.E., Director of Home Economics, Public Schools, Eveleth, Minnesota.

GERTRUDE VAILE, A.B., Director of Department of Education, Mountain Division, American Red Cross.

ARTHUR G. VESTAL, Ph.D., Head of Department of Biological Sciences, Illinois State Normal School.

HOMER E. WOODBRIDGE, Ph.D., Visiting Professor of English, University of Illinois.

ALBERT B. WOLFE, Ph.D., Professor of Economics and Sociology, University of Texas.

INSTRUCTORS FROM THE UNIVERSITY OF COLORADO

FRED B. R. HELLEMS, Ph.D., LL.D., Dean of the College of Liberal Arts; Professor of Latin.

FRANCIS RAMALEY, Ph.D., Professor of Biology.

MELANCHTHON F. LIBBY, Ph.D., Professor of Philosophy.

JOHN D. FLEMING, A.B., LL.B., LL.D., Dean of the School of Law; Charles Inglis Thomson Professor of Law.

EDWARD JACKSON, A.M., M.D., Sc.D., Professor of Ophthalmology.

OLIVER C. LESTER, Ph.D., Professor of Physics.

FRANK E. THOMPSON, A.B., Director of the College of Education; Professor of Education.

ROSS C. WHITMAN, A.B., M.D., Secretary of the School of Medicine, Boulder Division; Professor of Pathology.

JOHN S. McLUCAS, A.M., Professor of English.

LAWRENCE W. COLE, Ph.D., Director of the College of Home Economics and Social Service; Professor of Psychology.

JAMES C. TODD, Ph.B., M.D., Professor of Clinical Pathology.

CARBON GILLASPIE, M.D., Professor of Anatomy.

LORAN D. OSBORN, Ph.D., Director of the Extension Division; Professor of Sociology.

WILLIAM R. ARTHUR, A.B., LL.B., Professor of Law.

FRANK L. CLAPP, Ph.D., Professor of School Administration.

ROBERT C. LEWIS, Ph.D., Acting Director of the Henry S. Denison Research Laboratory; Professor of Biochemistry.

JAY W. WOODROW, Ph.D., Professor of Physics.

IVAN E. WALLIN, D.Sc., Acting Professor of Anatomy.

MELVILLE BLACK, M.D., Associate Professor of Ophthalmology.

CARL C. ECKHARDT, Ph.D., Assistant Professor of History.

WILLIAM F. BAUR, Ph.B., Assistant Professor of Germanic Languages.

FRANK G. ALLEN, B.S. (M.E.), Assistant Professor of Engineering Drawing.

PAUL M. DEAN, Ph.D., Assistant Professor of Chemistry.

GEORGE H. LIGHT, Ph.D., Assistant Professor of Mathematics.

THOMAS MAITLAND MARSHALL, Ph.D., Assistant Professor of History.

WALTER F. MALLORY, B.S. (M.E.), Assistant Professor of Mechanical Engineering.

OSCAR A. RANDOLPH, Ph.D., Assistant Professor of Physics.

JAMES N. ASHMORE, Director of Physical Education.

HELEN MASTERS BUNTING, Director of Physical Education for Women.

EMILY WOOD EPSTEIN, Acting Dean of Women (Summer, 1919);
Lecturer and Extension Instructor in Story-telling and Children's Literature.

DONALD MCFAYDEN, B.D., Ph.D., Instructor in History.

CLARIBEL KENDALL, A.M., Instructor in Mathematics.

WILLIAM H. CRISP, M.D., D.Oph., Instructor in Ophthalmology.

MAUD E. CRAIG, A.M., Instructor in Latin.

IRENE P. MCKEEHAN, A.M., Instructor in English.

GLADYS C. CURTIS, A.M., Instructor in Education.

JOHN W. RENNELL, Instructor in Art.

BESSIE R. GREEN, A.M., Instructor in Biology.

JOHN D. COOKE, A.M., Instructor in English Literature.

RUSSELL N. LOOMIS, B.S. (Phar.), Instructor in Chemistry.

HORACE B. VANVALKENBURGH, M.S., Instructor in Chemistry.

BENJAMIN D. CORNELL, A.M., Instructor in Chemistry.

CLARA HISCOCK BRACE, A.B., Instructor in Education.

- HENRY M. SAYRE, Instructor in Accounting.
- WILLIAM C. FINNOFF, M.D., D.Oph., Instructor in Ophthalmology.
- JOHN A. McCAW, M.D., D.Oph., Instructor in Ophthalmology.
- HIRAM R. STILWILL, M.D., Instructor in Ophthalmology.
- PARKER R. WHITNEY, B.S. (C.E.), Instructor in Civil Engineering.
- MAY SNYDER, A.B., Instructor in Romance Languages.
- YOLANDA S. ALLEN, Instructor in Physical Education for Women.
- WAYNE S. BEATTIE, B.S. (M.E.), Instructor in Mechanical Engineering.
- WALDO E. BROCKWAY, B.S. (C.E.), Instructor in Civil Engineering.
- CHARLES HUTCHINSON, A.M., Instructor in Engineering Mathematics.
- ELIZA G. WILKINS, Ph.D., Instructor in Greek.
- NORMAN E. HINDS, A.B., Instructor in Geology (Summer, 1919).
- H. AUFMWASSER, M.D., Instructor in Ophthalmology (Summer, 1919).
- EMMA A. JACKSON, A.B., Instructor in Library Science (Summer, 1919).
- RAMA V. BENNETT, B.S., Instructor in Home Economics (Summer, 1919).
- CLEOPHILE B. DEAN, Ph.D., Assistant in English Literature.
- FLOYD N. HOUSE, A.B., Assistant in Political Science.
- SARAH E. BRANHAM, Assistant in Bacteriology and Physiology.
- NEIL BORDEN, Assistant in Psychology (Summer, 1919).

GENERAL STATEMENT

PURPOSE AND ORGANIZATION

The Summer Session was established in 1904; a regular quarter has been organized for the summer of 1919. The School of Mountain Field Biology was opened in 1909. Courses in the Denver Division of the School of Medicine were first offered in 1912.

The summer quarter serves the needs of the following classes of students: (1) teachers and others who are not able to attend during the academic year; (2) regularly matriculated students who desire to supplement the work of the regular session; (3) students whose entrance preparation is deficient; (4) those who wish to review or extend their acquaintance with certain subjects without credit.

ADMISSION

For admission to the courses of this summer quarter no examinations are necessary. The courses are open to all who can satisfy the instructors of their ability to profit by them. Those who complete courses satisfactorily will be given certificates showing the amount of the work accomplished.

Those who intend to matriculate as candidates for a degree from the University of Colorado should present their entrance credentials to the Registrar before registering for the summer quarter. Information about matriculation requirements and requirements for degrees may be found on page 26.

RELATION OF THE SUMMER WORK TO THE COLLEGE OF EDUCATION

The summer quarter constituency is largely made up of superintendents, principals, and teachers. In recognition of this fact there are teachers' courses in many departments and other courses conducted with a view to emphasizing educational methods and principles. Ample provision is made for those desiring to take work counting toward the thirty hours of professional training prescribed by the Colorado Certification Law.

UNIVERSITY EXTENSION DIVISION

The University Extension Division provides an opportunity to students who cannot attend the University during the regular academic year, to continue work begun in the Summer Quarter. Announcement of University Extension courses may be obtained from the Registrar of the University.

PUBLIC LECTURES

Open lectures are given every afternoon or evening each week, affording students the opportunity of hearing speakers of eminent attainments in educational, literary, and scientific lines.

ADVANTAGES OF CLIMATE AND SURROUNDINGS

The climate and surroundings of Boulder afford exceptionally favorable conditions for summer study and recreation. The days are never uncomfortably warm; the nights are always cool. The air is dry and invigorating. On every side the scenery is varied, grand, and beautiful.

EXERCISE AND RECREATION; EXCURSIONS

The University gymnasium, the tennis courts and athletic field are open for the use of the students of the Summer Quarter. The region about Boulder offers abundant opportunities for mountain climbing. There are also conducted excursions each week, for students and faculty, to points of interest.

UNIVERSITY CAMP

The University during the Summer Quarter maintains a permanent camp at Arapahoe Falls, about twenty-five miles from Boulder, in one of the most attractive regions in the Rocky Mountains. Camping facilities by the day, week, or month, are provided at cost. Trips will be arranged for each week end and can be taken for a total cost of from four to six dollars.

FEEES

The tuition fee which does not vary with the number of courses taken is \$12.50 each term for residents of Colorado; \$15.00 each term, for non-resident students. A registration fee of \$1.00 is paid once by every student for each quarter or for a single term. Students electing courses in Education pay a library fee of \$1.00 for each course. A laboratory fee of \$4.00 is charged for each laboratory course in Chemistry. Laboratory fees are charged in other

laboratory courses, as stated in the description of these courses. For those who wish to attend courses or lectures without examination or formal credit, an auditor's ticket is issued at the regular tuition rate.

Admission to the classes is restricted to duly registered students and to those holding auditor's tickets.

ACCOMMODATIONS

The price for good board near the Campus varies from \$7.00 to \$9.00 a week. Rooms may be obtained for \$3.00 a week. By the formation of boarding clubs or by doing light housekeeping, expenses are materially reduced. The Registrar has a list of desirable boarding and rooming places and will supply information upon application.

REDUCED RAILWAY RATES

Low excursion rates for the summer are given by all the railways from eastern and southern points to Colorado.

Those who wish to take advantage of them are advised to apply to their local agents.

SUMMER QUARTER, 1919

The first term of the 1919 summer quarter opens June 30 and closes August 2; the second term opens August 4 and closes September 6. It is desirable that students register June 27 or 28. Final examinations are held August 1 for the first term, September 5 for the second term for all students who wish credit certificates for their work.

Courses in Liberal Arts, in Medicine, in Engineering and in Law are offered at Boulder; Courses in Mountain Field Biology at Tolland; courses in Ophthalmology, in the Denver Division of the School of Medicine.

CREDITS

Courses carried through the whole quarter carry the same credit as similar courses in any other quarter. Courses carried through one term only carry half credit.

ADDITIONAL INFORMATION

The announcement of the summer quarter will be sent upon request.

COURSES

ANATOMY AND SANITARY SCIENCE

1. COURSE IN ANATOMY FOR TEACHERS OF PHYSIOLOGY.
2. SANITARY SCIENCE.
3. ANATOMY OF THE CENTRAL NERVOUS SYSTEM.

ART

See under Drawing and Public School Art and Latin and Greek.

BACTERIOLOGY

1. GENERAL BACTERIOLOGY.
2. PRACTICAL BACTERIOLOGY.

BIOCHEMISTRY

1. BIOCHEMISTRY (PHYSIOLOGICAL CHEMISTRY).
2. CHEMISTRY OF BLOOD.

BIOLOGY

1. NATURE STUDIES (Lectures).
2. NATURE STUDIES (Laboratory).
3. ORNITHOLOGY.
4. ECONOMIC BOTANY.
5. COLLEGE ZOOLOGY (Double Course).
6. ECONOMIC ZOOLOGY.
7. COLLEGE BOTANY (Double Course).

See also under School of Mountain Field Biology.

CHEMISTRY

1. GENERAL INORGANIC CHEMISTRY (Lectures and Laboratory).
2. QUALITATIVE ANALYSIS (Lectures and Laboratory).
3. QUANTITATIVE ANALYSIS (Lectures and Laboratory, Double Course).
4. ADVANCED QUANTITATIVE ANALYSIS (Laboratory).
5. ORE ANALYSIS.
6. ANALYSIS OF IRON AND STEEL.

7. GAS ANALYSIS.
8. ORGANIC CHEMISTRY (Lectures, Double Course).
9. ORGANIC PREPARATIONS (Laboratory).
10. ELEMENTARY ORGANIC ANALYSIS.
11. PHYSICAL CHEMISTRY (Lectures).
12. PHYSICAL CHEMISTRY (Laboratory).
13. CHEMISTRY OF PHOTOGRAPHY.
14. TEACHERS' COURSE IN CHEMISTRY.
15. HISTORY OF CHEMISTRY.
16. SANITARY WATER ANALYSIS.
17. MINERAL WATER ANALYSIS.
18. FOOD ANALYSIS.
19. DRUG ANALYSIS.
20. CHEMISTRY OF FOODS.
21. CHEMISTRY OF BLOOD.
22. PHYSIOLOGICAL CHEMISTRY.
23. RESEARCH COURSE IN CHEMISTRY.

DRAWING AND PUBLIC SCHOOL ART

- †1. TEACHERS' COURSE IN PUBLIC SCHOOL ART.
- †2. ADVANCED COURSE IN PUBLIC SCHOOL ART.
- †3. PICTURE STUDY.
4. INTERIOR DECORATION.
5. COLOR AND DESIGN.
6. COMMERCIAL DESIGN.
7. FREEHAND DRAWING.
8. MECHANICAL DRAWING.
9. DESCRIPTIVE GEOMETRY.

ECONOMICS AND SOCIOLOGY

1. PRINCIPLES OF ECONOMICS.
2. CONSERVATION OF NATURAL RESOURCES.
3. PRINCIPLES OF SOCIOLOGY.
4. PRINCIPLES OF SOCIOLOGY (CONTINUED).
5. THE MODERN WOMAN MOVEMENT.
6. INDUSTRIAL RECONSTRUCTION.
7. PROBLEMS OF RECONSTRUCTION.

† For courses indicated by a dagger credit is not given toward a degree in the University of Colorado. A certificate showing the amount and grade of work done in such courses, will be issued to those who desire it.

- 8. PRINCIPLES OF ACCOUNTING.
- †9. BOOKKEEPING.
- †10. STENOGRAPHY.
- †11. TYPEWRITING.

EDUCATION

- 1. PRINCIPLES OF EDUCATION.
- 2. PRINCIPLES OF PRE-SCHOOL EDUCATION.
- 3. PUBLIC EDUCATION.
- 4. PRINCIPLES OF TEACHING.
- 5. PRACTICE TEACHING.
- 6. KINDERGARTEN EDUCATION.
- 7. PRIMARY EDUCATION.
- 8. ELEMENTARY EDUCATION.
- 9. SECONDARY EDUCATION.
- 10. PUBLIC SCHOOL PROGRAM OF STUDIES.
- 11. SCHOOL ADMINISTRATION.
- 12. SCHOOL SUPERVISION.
- 13. SCHOOL TESTS AND SURVEYS.
- 14. ANTHROPOLOGY.
- 15. ETHNOLOGY.
- 16. SOCIAL PSYCHOLOGY.
- 17. EDUCATION AND SOCIETY.

ENGLISH

- 1. MASTERPIECES OF PROSE FICTION III.
- 2. MASTERPIECES OF PROSE FICTION IV.
- 3. COMPOSITION.
- 4. AMERICAN POETRY.
- 5. THE TEACHING OF ENGLISH IN THE SECONDARY SCHOOL.
- 6. SHAKESPEARE'S COMEDIES.
- 7. SHAKESPEARE'S TRAGEDIES.
- 8. THE SHORT STORY.
- 9. POETS OF THE ROMANTIC PERIOD.
- 10. MODERN DRAMA (Continental).
- 11. MODERN DRAMA (English and Irish).
- 12. HISTORY OF LITERARY CRITICISM.

† For courses indicated by a dagger credit is not given toward a degree in the University of Colorado. A certificate showing the amount and grade of work done in such courses, will be issued to those who desire it.

13. PHILOSOPHY OF BROWNING.
14. CLASSICAL MYTHOLOGY.
15. GREEK POETRY IN ENGLISH.
16. GREEK ART.

GEOLOGY AND GEOGRAPHY

1. PRINCIPLES OF EARTH SCIENCE.
2. FIELD GEOLOGY.
3. GEOGRAPHIC INFLUENCES.
4. CLIMATOLOGY.
5. INDUSTRIAL AND COMMERCIAL GEOGRAPHY.

GERMANIC LANGUAGES

1. ELEMENTARY GERMAN.
2. ELEMENTARY READING AND ORAL PRACTICE.
3. ELEMENTARY GERMAN, CONTINUATION.
4. GERMAN COMPOSITION AND COLLOQUIAL PRACTICE.
5. TEACHERS' COURSE IN GERMAN.
6. THE GERMAN DRAMA OF THE NINETEENTH CENTURY.

HISTORY

1. SURVEY OF GREEK HISTORY.
2. SURVEY OF ROMAN HISTORY.
3. HISTORY OF INTERNATIONALISM.
4. TEACHERS' COURSE IN HISTORY.
5. HISTORY OF RUSSIA.
6. THE FRENCH REVOLUTION.
7. HISTORY OF MODERN EUROPE FROM 1300 TO 1648.
8. DEVELOPMENT OF AMERICAN NATIONALITY, 1789 TO 1829.
9. CIVIL WAR AND RECONSTRUCTION.
10. HISTORY OF AMERICAN FOREIGN POLICY.
11. THE GREAT WAR.
12. FOREIGN RELATIONS OF THE UNITED STATES.
13. COLONIAL HISTORY OF NORTH AMERICA.

HOME ECONOMICS

1. SELECTION AND PREPARATION OF FOODS.
2. MEAL PLANNING AND TABLE SERVICE.
3. FOODS AND NUTRITION, SURVEY COURSE.
4. TEXTILES—EVOLUTION OF SPINNING AND WEAVING.
5. CLOTHING.
6. CLOTHING—DRESSMAKING.

LATIN AND GREEK

1. VIRGIL, AENEID BOOKS VII-XII.
2. CLASSICAL MYTHOLOGY.
3. ROMAN COMEDY.
4. GREEK POETRY IN ENGLISH.
5. LATIN VERB SYNTAX FOR TEACHERS.
6. GREEK ART.

LIBRARY SCIENCE AND PRACTICE

1. LIBRARY SCIENCE AND PRACTICE.

MANUAL TRAINING AND SHOP WORK

- †1. TEACHERS' COURSE IN WOODWORKING.
2. WOODWORKING.
3. AUTOMOBILES.
4. AUTOMOBILES, CONTINUATION.
- †5. AUTOMOBILE SHOP WORK.

MATHEMATICS

1. SOLID GEOMETRY.
2. TRIGONOMETRY.
3. COLLEGE ALGEBRA.
4. PLANE ANALYTICAL GEOMETRY.
5. DIFFERENTIAL CALCULUS.
6. HISTORY OF MATHEMATICS.
7. FUNDAMENTAL CONCEPTS OF MATHEMATICS.
8. DIFFERENTIAL EQUATIONS.
9. LEAST SQUARES.
10. CALCULUS OF VARIATIONS.
11. THEORY OF ALGEBRAIC EQUATIONS.
12. DEFINITE INTEGRALS.
13. THEORY OF A COMPLEX VARIABLE.
14. ELLIPTIC INTEGRALS AND FUNCTIONS.
15. AN INTRODUCTORY COURSE IN ANALYSIS.
16. DIFFERENTIAL GEOMETRY.

† For courses indicated by a dagger credit is not given toward a degree in the University of Colorado. A certificate showing the amount and grade of work done in such courses, will be issued to those who desire it.

MUSIC

1. APPRECIATION OF MUSIC.
2. HARMONY.
- †3. PUBLIC SCHOOL MUSIC.
- †4. EAR TRAINING AND SIGHT SINGING.

OPHTHALMOLOGY

(At Denver)

1. SPECIAL ANATOMY AND HISTOLOGY OF THE EYE.
2. EMBRYOLOGY AND ANOMOLIES OF THE EYE.
3. PATHOLOGY, SYSTEMATIC AND LABORATORY.
4. PRINCIPLES AND ADVANCED PROBLEMS IN REFRACTION AND OCULAR MOVEMENTS.
5. GENERAL OPHTHALMIC DIAGNOSIS.
6. OPHTHALMOSCOPIC DIAGNOSIS.
7. DAILY UNIVERSITY EYE CLINIC.
8. SPECIAL LECTURES ON RELATIONS OF EYE DISEASES TO GENERAL MEDICINE AND SURGERY.

PHILOSOPHY

1. PHILOSOPHY OF BROWNING.
2. SOCIAL ETHICS.

PHYSICAL EDUCATION

- †1. FOOTBALL.
- †2. BASEBALL.
- †3. BASKETBALL.
- †4. TRACK AND FIELD ATHLETICS.
- †5. TENNIS.
- †6. GENERAL COURSE IN ATHLETICS FOR WOMEN.
7. PLAYGROUND MANAGEMENT.
- †8. ADVANCED GYMNASTIC COURSE.
- †9. AESTHETIC DANCING.
10. TEACHERS' COURSE IN PHYSICAL TRAINING.

PHYSICS

- †1. ELEMENTARY PHYSICS.
- 2-3. GENERAL COLLEGE PHYSICS (Double Course).
- 4-5. GENERAL COLLEGE PHYSICS (Double Course).

† For courses indicated by a dagger credit is not given toward a degree in the University of Colorado. A certificate showing the amount and grade of work done in such courses, will be issued to those who desire it.

- 6-9. EXPERIMENTAL PHYSICS.
10. TEACHERS' COURSE IN PHYSICS.
11. DESCRIPTIVE ASTRONOMY.
12. PHOTOGRAPHY.
13. THEORETICAL MECHANICS—STATICS.
14. THEORETICAL MECHANICS—DYNAMICS.
15. PROPERTIES OF MATTER.
16. THEORY OF ELECTRICITY AND MAGNETISM.
17. HEAT AND THERMODYNAMICS.
18. KINETIC THEORY OF GASES.
19. CONDUCTION OF ELECTRICITY THROUGH GASES.
- 20a. RADIOACTIVITY.
- 20b. MEASUREMENTS IN RADIOACTIVITY.
21. ELECTRONS.
22. THEORY AND METHODS OF WIRELESS COMMUNICATION.
23. RESEARCH COURSE IN PHYSICS.

PHYSIOLOGY AND SANITARY SCIENCE

See under Anatomy and Sanitary Science.

POLITICAL SCIENCE

1. AMERICAN GOVERNMENT.
2. COMPARATIVE EUROPEAN GOVERNMENTS.
3. PROBLEMS OF CONTEMPORARY DEMOCRACY.

PSYCHOLOGY

1. GENERAL PSYCHOLOGY.
2. CHILD PSYCHOLOGY.
3. MENTAL TESTS.
4. ADVERTISING, SALESMANSHIP, AND PERSONNEL.
5. ANATOMY OF THE CENTRAL NERVOUS SYSTEM.

PUBLIC SPEAKING AND READING

1. VOCAL EXPRESSION.
2. VOCAL INTERPRETATION OF LITERATURE.
3. EXTEMPORANEOUS SPEAKING.
4. PUBLIC SPEAKING.
5. INTERPRETATION OF DRAMATIC LITERATURE.
6. PUBLIC READING.

ROMANCE LANGUAGES

1. FRENCH—BEGINNERS' COURSE.
2. ELEMENTARY COURSE WITH PRACTICE IN SPEAKING.
3. INTERMEDIATE FRENCH.
4. ADVANCED FRENCH.
5. MOLIÈRE AND HIS TIMES.
6. SPANISH—BEGINNERS' COURSE.
7. ELEMENTARY SPANISH READING.
8. INTERMEDIATE SPANISH.
9. MODERN SPANISH FICTION.
10. MODERN SPANISH DRAMA.

STORY TELLING

- †1. STORY-TELLING AND CHILDREN'S LITERATURE.

COLLEGE OF ENGINEERING

CIVIL ENGINEERING

1. SURVEYING.
2. TECHNICAL MECHANICS—STATICS.
3. HYDRAULICS.
4. APPLIED MECHANICS (Lectures).
5. APPLIED MECHANICS (Laboratory).

ELECTRICAL ENGINEERING

1. DIRECT CURRENT MACHINES.
2. ALTERNATING CURRENT MACHINES.
3. ELECTRICAL LABORATORY.
4. ENGINEERING MATERIALS.

MECHANICAL ENGINEERING

1. KINEMATICS.
2. STEAM ENGINES AND BOILERS.
3. THERMODYNAMICS.

SHOP WORK

- †1. TEACHERS' COURSE IN WOODWORKING.
2. WOODWORKING.
3. AUTOMOBILES.
4. AUTOMOBILES, CONTINUATION.
- †5. AUTOMOBILE SHOP WORK.

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GENERAL ENGINEERING DRAWING

1. MECHANICAL DRAWING.
2. DESCRIPTIVE GEOMETRY.
3. FREEHAND DRAWING.

ENGINEERING MATHEMATICS

1. ALGEBRA.
2. TRIGONOMETRY.
3. ANALYTICAL GEOMETRY.
4. CALCULUS (Differential and Integral).

SCHOOL OF MEDICINE

1. GENERAL BACTERIOLOGY.
2. PRACTICAL BACTERIOLOGY.
3. BIOCHEMISTRY.
4. BLOOD CHEMISTRY.
5. CLINICAL LABORATORY METHODS.
6. ADVANCED PATHOLOGY.

SCHOOL OF LAW

1. PROPERTY I.
2. TORTS.
3. COMMON LAW PLEADING.
4. MINES AND MINING.
5. CONSTITUTIONAL LAW.
6. WILLS.

SCHOOL OF MOUNTAIN FIELD BIOLOGY
(At Tolland)

1. FIELD AND FOREST BOTANY.
2. PLANT ECOLOGY.
3. SYSTEMATIC BOTANY.
4. RESEARCH PROBLEMS IN BOTANY.

TRAINING SCHOOL FOR SOCIAL WORKERS

First term, June 30 to August 2, 1919.

Second term, August 2 to September 6, 1919.

The Training School for Social Workers is organized to provide a short course of training in the Rocky Mountain region for those who are interested in social welfare activities and find it inconvenient to attend an established School of Civics and Philanthropy, situated at a distance. Welfare work arising in connection with the war has added greatly to the already growing demand for social workers who desire special training. The course outlined below is offered in cooperation with the Home Service Department of the Mountain Division of the American Red Cross.

CERTIFICATE

A Home Service certificate will be given by the American Red Cross to all who successfully complete this work. No credit is given towards a degree in the University of Colorado.

FEES

The fees are the same as required of students in the regular courses. See page 261.

ADDITIONAL INFORMATION

Additional information regarding the Training School for Social Workers may be obtained by addressing the professor in charge, Dr. Loran D. Osborn, Director of the Extension Division, University of Colorado, Boulder, Colorado.

COURSES

1. SOCIAL PROBLEMS.
2. PRINCIPLES AND METHODS OF SOCIAL CASE WORK.
3. SOCIAL INSTITUTIONS.
4. PROBLEMS OF HEALTH AND SANITATION.
5. FIELD WORK.
6. THE STUDY OF COMMUNITY LIFE.
7. INDUSTRIAL PROBLEMS.
8. HOUSEHOLD ADMINISTRATION.
9. RED CROSS HOME SERVICE ORGANIZATION AND PROCEDURE.

ELEMENTARY AND HIGH-SCHOOL COURSES

University Training School, Cor. College Avenue and 11th Street.
(Elementary Courses).

State Preparatory School, Cor. Pearl and 17th Streets.
(High-School Courses.)

These Schools are conducted by the College of Education of the University of Colorado and the Boulder Board of Education as ungraded schools, six weeks, June 30 to August 9. Instruction is offered pupils of any grade, from the first to the twelfth, in all the usual elementary and high-school subjects. This meets the needs of those who lack some of their college entrance credits; of those who may have failed of promotion; of those who are passing into a higher grade, but require help in some of their more difficult subjects; of those who are able to do more rapid work; and of those who wish extra work.

Not only is great care given to subject matter, but all pupils receive special attention with a view to improvement in habits and methods of study; all are taught as far as possible how to learn, especially how to work at home.

For the younger children, three to seven years of age, there is a kindergarten school, conducted as far as is feasible, in the open air. The exercises are calculated to give the pupils good interests and make them self-helpful.

REGISTRATION

Registration will take place from 8:30 to 11:30 a. m., June 27 and 28, Room 17, Liberal Arts Building, University of Colorado, or at the Schools.

FEES

The fees are as follows:

Kindergarten—\$5.00 for the course. Elementary School subjects, First to Fourth Grades—\$3.00 per course. Fifth to Eighth Grades—\$4.00 per course. High-school Courses—\$8.00 for one course; \$15.00 for two courses.

ADDITIONAL INFORMATION

Further information about these Schools will be given by the Director of the College of Education.

UNIVERSITY EXTENSION DIVISION

FACULTY

GEORGE NORLIN, Ph.D., President of the University.

LORAN D. OSBORN, Ph.D., Director; Professor of Sociology.

C. HENRY SMITH, Ph.B., Librarian of the University; Secretary,
Bureau of Library Extension.

ELMORE PETERSEN, A.B., Secretary, Bureau of Business and Com-
mercial Development.

*ARTHUR E. GILMAN, A.B., Secretary, Bureau of Community Welfare.

†JAMES C. STEPHENS, A.B., Secretary, Bureau of Vocational Instruc-
tion.

ALMA GABRIEL, A.B., Secretary, Bureau of Correspondence Instruc-
tion.

‡ROOSEVELT WALKER, A.B., Field Organizer.

OTHO B. STAPLES, A.M., Superintendent Western Colorado District.

A. CHAUNCEY JOHNSON, B.S., Vocational Instructor.

GEORGE C. MANN, A.B., Vocational Instructor.

PORTIA OLWIN, A.B., Office Secretary.

GRACE SOWTER, Stenographer.

The Faculty includes also Professors and Instructors in the various University departments who give Extension courses or lectures, together with special Extension Instructors appointed to conduct classes in various centers throughout the State.

NON-RESIDENT INSTRUCTIONAL STAFF

J. F. KEATING, M.A., *Pueblo*, Extension Instructor in History.

HELGA KATINCKA HENDRIKS, *Pueblo*, Extension Instructor in French.

EMILY WOOD EPSTEEN, *Clifton*, Extension Lecturer and Instructor in
Story-telling and Children's Literature.

* On leave of absence for war service.

† Director of Committee on Americanization, Colorado Council of De-
fense.

‡ Winter and spring quarters, 1918-1919.

GEORGIA L. FIELD, Ph.D., *Wooster, Ohio*, Extension Instructor in Comparative and English Literature.

H. H. DONLEY, *Frederick*, Extension Instructor in Mining Mathematics.

THOMAS GIBBEY, *Frederick*, Extension Instructor in Mining.

MARGARET LONG, *Frederick*, Extension Instructor in English.

MORGAN WILLIAMS, *Superior*, Extension Instructor in Mining.

F. N. OBERDING, *Louisville*, Extension Instructor in Mining.

CHARLES BILLINGTON, *Lafayette*, Extension Instructor in Mining.

JULIA B. FRANKLE, *Lafayette*, Extension Instructor in Mathematics.

KATHERINE SCHRAEDER, *Lafayette*, Extension Instructor in English.

ARCHIBALD TAYLOR, Litt.B., Extension Instructor in Shop Mathematics.

REX E. BECKETT, Extension Instructor in Shop Mathematics.

G. M. DRUMMOND, Extension Instructor in Sugar Technology.

R. W. TRUSCOTT, A.B., Extension Instructor in Shop Mathematics.

C. B. RAYBOURN, A.B., Extension Instructor in Shop Mathematics.

AVERY CLARK, A.B., Extension Instructor in Sugar Technology.

J. R. LANPHEAR, Extension Instructor in Shop Mathematics and English.

H. M. BROWN, M.A., Extension Instructor in Shop Mathematics.

G. J. DALEY, A.B., Extension Instructor in Sugar Technology.

A. C. COHAGEN, A.B., Extension Instructor in Shop Mathematics.

G. W. ATKINSON, A.B., Extension Instructor in Shop Mathematics.

WILLIAM BARBER, Extension Instructor in Sugar Technology.

E. G. BAKER, M.A., Extension Instructor in Shop Mathematics and English.

F. KLINGENBERG, Extension Instructor in Sugar Technology.

JOHN TRACY, Extension Instructor in Shop Mathematics.

H. E. BLACK, A.B., Extension Instructor in Shop Mathematics.

PERCIVAL SHEPHERD, A.B., Extension Instructor in Shop Mathematics.

F. F. GAZELLE, Extension Instructor in Sugar Technology.

W. H. HILL, A.B., Extension Instructor in Shop Mathematics.

G. E. STEVENS, A.B., Extension Instructor in Shop Mathematics.

C. H. CRISWELL, A.B., Extension Instructor in Sugar Technology.

RAY B. HOLLINGSHEAD, A.B., Extension Instructor in Shop Mathematics and English.

T. A. FRENCH, Extension Instructor in Shop Mathematics.

P. KOLLER, A.B., Extension Instructor in Sugar Technology.

J. T. DAVIS, A.B., Extension Instructor in Shop Mathematics.

NEAL D. MOORE, A.B., Extension Instructor in Shop Mathematics and English.

H. E. TURK, Extension Instructor in Shop Mathematics.

LOUIS WIND, A.B., Extension Instructor in Shop Mathematics.

HESTER DICKINSON, A.B., Extension Instructor in Shop Mathematics and English.

R. C. WELSH, Extension Instructor in Sugar Technology.

PAUL MCCREARY, Extension Instructor in Shop Mathematics.

GENERAL STATEMENT

The Extension Division was organized in 1912. It aims to make the campus of the University coextensive with the State, in keeping with the new idea that a state university exists for all the people and not for a favored few alone.

The various departments of the University have at their disposal material that can be of great value in the development of the resources of the State. Particularly is this true in connection with the new problems of community welfare, and of business and industrial development. The Extension Division endeavors to connect the University departments with the people who wish to utilize these resources. This is done through two main departments, with various subdivisions, as appears in the following outline of Extension activities:

I. Department of Instruction:

Correspondence Instruction.

Class Instruction.

Vocational Instruction.

II. Department of Public Service:

Community Welfare.

Business and Commercial Development.

Lectures and Visual Instruction.

Americanization.

Library Extension.

Municipal Information.

Publications.

DEPARTMENT OF PUBLIC SERVICE

The Department of Public Service deals with those more general phases of public education and community welfare which can not be adequately met by courses of formal instruction.

Lectures by members of the University faculties and others are arranged, separately and in courses, covering a wide range of subjects. Stereopticon slides of an educational character are furnished, at cost of transportation, for use in the public schools and in entertainments that are of interest to both pupils and parents.

Assistance is given to communities throughout the State, upon request, in solving the new problems that have arisen in our complex life. Community Welfare Conferences are held, involving a preliminary study or social survey of the town, a cooperative conference program of three or four days' duration, and a community welfare exhibit. A special bulletin, published by the Bureau of Community Welfare, will be sent upon request.

Child Welfare Institutes are held for the purpose of emphasizing community obligations to improve conditions in connection with the health and welfare of children. Traveling exhibits relating to child welfare have been prepared and will be sent to communities without charge, except for transportation.

Through the Department of Education, cooperating with superintendents and groups of teachers, a comparative study is made of school systems and the educational principles involved, and other kinds of assistance are rendered to public schools.

Through the University Library, books and package libraries are sent to high schools, clubs, and individuals. Inquiries for information are answered from the resources of the library and the various departments of the University. In writing for material from the library, address, University of Colorado Library.

Business Short Courses are conducted, either in connection with conventions of business men, or at sessions convened for this special purpose. Each course covers a period of three or four days and treats the various aspects of modern business problems.

Business surveys are made with the purpose of determining the commercial resources and trade possibilities of a community. Classes in business subjects are organized and conducted, cooperative work is undertaken with commercial clubs, individual stores and business firms are visited for the purpose of rendering individual assistance in meeting their business problems, and the results are discussed with the business interests concerned.

Americanization work is carried on with various foreign groups throughout the State. Classes in English and Citizenship; American History, and Government are formed, and an attempt made to inspire and assist the foreigner in his efforts to become an American citizen.

Bulletins are published from time to time making available to the public the results of investigations carried on by members of the University faculties.

DEPARTMENT OF INSTRUCTION

The Department of Extension Instruction offers formal courses of study by correspondence and in classes, to such persons as wish to engage in systematic study without leaving home or giving up their regular occupations.

Both academic and vocational courses are given. The academic courses cover a large part of the regular curriculum of the College of Liberal Arts, and, in general, receive credit which applies toward a university degree. Courses in secondary education are also offered, particularly for the benefit of those beyond the high-school age or living where a high school is not accessible.

The Vocational courses are intended more especially for men and women in offices, stores and industrial life who desire to increase the value of their work and to gain a better understanding of its correlation with the business world in general. The daily task and the study of the educational principles underlying it thus supplement each other. The vocational courses are granted recognition by means of a University Extension certificate.

A course of study of an informal nature has been arranged for mothers. This course covers a period of two years, taking the child from the time of conception up to the second year. The registration fee for this course is nominal so that it is available to all mothers.

Courses in clinical laboratory methods are given as a part of the work of the Department of Clinical Pathology of the School of Medicine. They are intended primarily for practicing physicians and for nurses. For list of courses at present available see page 288. Other courses are in preparation. Special bulletin will be sent upon request.

Programs for clubs and organizations are furnished upon request, by the Department of Instruction. Programs can be prepared along any desired line, if sufficient time is allowed, but the following are available at any time: Various periods of English and American Literature, with typical readings; Literature of the Great War; The Effect of the War on Education; Woman's Place in Reconstruction; The League of Nations; The Peace Conference, and the Nations Affected by It.

CORRESPONDENCE INSTRUCTION

UNIT OF WORK AND UNIVERSITY CREDIT.—When the work given by correspondence is of University grade and college entrance requirements have been fulfilled, it is granted University credit of equal value to that done in residence. A course that consists of forty assignments is granted seven and one half hours' credit toward the 186 hours required for the A.B. degree; a course of thirty-two assignments, six hours' credit; a course of twenty-four assignments, four and one half hours' credit; and a course of sixteen assignments, three hours' credit. It is estimated that a course of forty lessons will require a minimum of one hour of study a day, six days in the week, for forty weeks. The unit of work is thus a course divided into eight assignments, involving one and a half hours' credit, and requiring about one hour's study a day for a period of eight weeks. One-fourth of the work for the A.B. degree may be done in the Extension Division.

INSTRUCTORS.—Correspondence instruction is carried on under the immediate supervision of the members of the University faculty.

METHOD.—The student who desires to undertake correspondence-study should enroll directly with the University Extension office upon blanks furnished for that purpose on application. After the enrollment has been duly completed, assignments of lessons prepared by the instructors will be sent to the student, together with directions concerning textbooks, study, outline work, and such other details as may be deemed helpful. The student may begin his course at any time and proceed with the work as fast as he wishes. An examination is given at the end of the course.

WORK, PARTLY BY UNIVERSITY EXTENSION, FOR MASTER OF ARTS DEGREE.—For information regarding requirements for the Master of Arts degree in connection with University Extension Work, see page 195.

EXPENSES.—The fee for each correspondence course of forty lessons is \$20.00; for a shorter course the fee is proportionately less—that is, a course of twenty-four lessons, is \$12.00, and a course of sixteen lessons, \$8.00. The unit of reckoning is a course of eight assignments, involving one and a half hours' credit, and costing \$4.00. Where several courses are taken at one time, there is a reduction of 25 per cent. on all fees in excess of \$20.00. The fees are

payable in advance. The textbooks are purchased by the students themselves, as is done by resident students. Reference books are loaned by the University Library so far as its resources will permit.

CLASS INSTRUCTION

ORGANIZATION AND MEETINGS.—University Extension Classes are organized in places where groups of students may wish to study the same course together. The class meets in the evening, late afternoon, or on Saturday, and for as many sessions as the course studied may require. The class should enroll directly with the University Extension office upon blanks furnished for that purpose on application, after which, other details of organization will be completed.

CREDIT.—Where University credit is involved, the class usually holds a double-period session (100 minutes) each week during the school year, or for any part of the year. The work approximates as closely as possible that taken in residence—in the quality of work done, the conduct of the courses, the time required of the student for preparation, and the amount of credit given.

Upon the completion of such a course and the passing of a satisfactory examination, the work will receive the same credit as a similar two-hour course taken at the University, namely, six hours for the academic year, or three hours for half a year. If the class prefers, sessions may be held less frequently than once a week, or for a shorter period than 100 minutes; in which case credit will be allowed in proportion.

INSTRUCTORS AND CLASS LEADERS.—The classes are conducted under the supervision of the heads of the appropriate departments at the University, but with different arrangements in different places so far as local leadership is concerned:

1. With a University instructor, when the class is located in a town near the University.
2. With a local instructor of University qualifications, when the class is too far away to be reached by an instructor from the University.
3. With a class leader, when a group of students may wish to unite for study where no qualified instructor is available in the sub-

ject desired. In this case, one of the members of the class is appointed class leader, and the course is conducted directly with the University by correspondence.

FEES.—The fees for class instruction in academic courses are \$10.00 per student for a class meeting weekly for a double period throughout the school year (six credits, in credit courses); or \$5.00 for such a class conducted half the year (three credits, in credit courses); or in the same proportion for classes meeting less frequently or for a shorter recitation period.

The fees for instruction in business and technical classes are at the uniform rate of fifty cents per lesson, making a course of ten lessons cost each student \$5.00; sixteen lessons, \$8.00, and so on in the same proportion.

EXTENSION COURSES

ART

1. FREEHAND DRAWING.

Principles of freehand perspective, light and shade, practice drawing from models and casts, and assigned reading.

BIOLOGY

1. BIOLOGICAL THEORIES.

2. SANITARY SCIENCE.

3. ELEMENTS OF ZOOLOGY.

4. ECONOMIC ZOOLOGY.

5. ENTOMOLOGY.

6. PALEOBOTANY.

7. MOLLUSCA.

8. ASSIGNED READINGS IN BIOLOGY.

9. PRINCIPLES OF HEREDITY.

BUSINESS

1. SALESMANSHIP.

2. ADVERTISING.

3. ACCOUNTANCY.

4. ECONOMICS OF RETAILING.

CHEMISTRY

Work by special arrangement.

CITIZENSHIP

1. COURSES PREPARING FOR NATURALIZATION.

2. ENGLISH.

3. ARITHMETIC.

CIVIL SERVICE

1. CLERICAL, MINOR CLERICAL, DEPARTMENTAL SERVICE. 10 assignments.

The purpose of the course is to fit the applicant for Government office work in the various departments in Washington, D. C.

The assignments cover the subjects required in competitive examinations for these positions, and are corrected and graded according to civil service rules and ratings. Examinations are held monthly in all cities of importance throughout the United States. The demand for this branch of the service greatly exceeds the supply.

2. CLERICAL, MINOR CLERICAL, FIELD SERVICE. 10 assignments.

Prepares for clerical and minor clerical positions in field branches in internal revenue, customs, sub-treasury, mint and assay, and public health services, bureau of animal industry, and other parts of the service. Course same as above, and including three additional subjects. Examinations are held as announced by the Civil Service Commission.

3. STENOGRAPHER AND TYPEWRITER. DEPARTMENTAL AND FIELD SERVICE. 10 assignments.

An advanced civil service course in the two subjects, combined with the clerical subjects required in the competitive examination for clerk with knowledge of stenography or typewriting, and the stenographer and typewriter examinations. The demand in the departmental service greatly exceeds the supply. Examinations every Tuesday in large cities and monthly in smaller cities.

4. GRAPHOTYPE OPERATOR, DEPARTMENTAL. 10 assignments.

F 1 ADDRESSOGRAPH OPERATOR,

AUTOMATIC 3 ADDRESSOGRAPH OPERATOR,

MIMEOGRAPH OPERATOR,

PROOF READER.

The course includes coaching in the subjects required by the Civil Service Commission in the examinations to fill the above positions. Competitors may or may not have practical experience in proof reading or in operating the above machines. Examinations as announced by the Commission.

5. CODER, WAR DEPARTMENT. 10 assignments.

Coaching in the subjects required for examinations for coder in the War Department. Persons holding this position are required to code information furnished them by numerical code. Competitors may or may not be experienced. Experienced competitors must be experienced in Hollerith, Powers or Pierce Tabulating Equipment.

6. BOOKKEEPER AND BOOKKEEPER-TYPEWRITER, DEPARTMENTAL. 10 assignments.

An advanced civil service course in the two subjects, combined with the clerical subjects required in the competitive examinations for Washington service. Examinations held every Tuesday.

ECONOMICS

1. ECONOMIC RESOURCES AND COMMERCIAL GEOGRAPHY.
2. ECONOMIC HISTORY OF THE UNITED STATES.
3. PRINCIPLES OF ECONOMICS.

EDUCATION

1. PRINCIPLES OF EDUCATION.
2. PRINCIPLES OF TEACHING.
3. ANTHROPOLOGY.
4. ETHNOLOGY.
5. SOCIAL PSYCHOLOGY.
6. EDUCATION AND SOCIETY.
7. PRINCIPLES OF PRE-SCHOOL EDUCATION.

ENGINEERING (ELECTRICAL)

1. ELEMENTS OF ELECTRICITY AND DIRECT-CURRENT MACHINERY.
2. ALTERNATING CURRENTS AND ALTERNATING-CURRENT MACHINERY.
3. CENTRAL ELECTRIC STATIONS.
4. ELECTRIC WIRING.
5. TELEPHONES AND TELEPHONE APPARATUS.

Graduate courses arranged for engineering alumni.

ENGINEERING (MECHANICAL)

1. ENGINEERING MATHEMATICS.
2. ENGINEERING MATERIALS.
3. FREEHAND DRAWING.
4. MECHANICAL DRAWING.
5. DESCRIPTIVE GEOMETRY.
6. BOILERS.
7. STEAM ENGINES.

Graduate courses arranged for engineering alumni.

ENGLISH LANGUAGE

1. FRESHMAN ENGLISH.
2. ADVANCED COMPOSITION.
3. SHAKESPEARE.
4. JOURNALISM.
5. SHORT STORY WRITING.
6. SHORT STORY FORM.
7. NINETEENTH CENTURY ESSAYISTS.

ENGLISH LITERATURE

1. HISTORY OF ENGLISH LITERATURE.
2. AMERICAN AUTHORS.
3. SHAKESPEARE: ALL THE PLAYS.

FRENCH

1. BEGINNERS' COURSE (Classes).
2. PROSE COMPOSITION AND CONVERSATION (Classes).
3. FRENCH LITERATURE (Correspondence).
4. SECOND YEAR COMPOSITION (Correspondence or in Classes).

GERMAN

1. COMPOSITION (Elementary).
2. ADVANCED GERMAN COMPOSITION.
3. THE GERMAN NOVELLE.
4. VON SCHEFFEL'S "EKKEHARD"

GREEK

1. ELEMENTARY COURSE.
2. CLASSICAL MYTHOLOGY.

HISTORY

1. MEDIEVAL HISTORY.
2. MODERN HISTORY.
3. EUROPE SINCE 1815.
4. ENGLISH HISTORY TO 1558.
5. ENGLISH HISTORY, 1558 TO THE PRESENT TIME.

LATIN

1. LATIN PROSE.
2. LATIN LITERATURE.
3. ROMAN HISTORY.
4. MARTIAL AND PLINY.

MATHEMATICS

1. COLLEGE ALGEBRA.
2. PLANE TRIGONOMETRY.
3. PLANE AND SPHERICAL TRIGONOMETRY.
4. SOLID GEOMETRY.
5. PLANE ANALYTIC GEOMETRY.
6. DIFFERENTIAL CALCULUS.
7. INTEGRAL CALCULUS.
8. DIFFERENTIAL EQUATIONS.
9. ADVANCED COLLEGE ALGEBRA.
10. HISTORY OF MATHEMATICS.

MEDICINE

CLINICAL LABORATORY METHODS

1. HEMATOLOGY A.
2. HEMATOLOGY B.
3. BLOOD MORPHOLOGY.
4. MICROSCOPY.

PHILOSOPHY

1. HISTORY AND PHILOSOPHY OF EDUCATION.
2. ETHICS.
3. HISTORY OF PHILOSOPHY.
4. LOGIC.

PHYSICS

1. GENERAL PHYSICS.
2. THEORETICAL MECHANICS—STATICS.
3. THEORETICAL MECHANICS—DYNAMICS.
4. DESCRIPTIVE ASTRONOMY.
5. VECTOR ANALYSIS.

PSYCHOLOGY

1. **GENERAL PSYCHOLOGY.**
2. **EDUCATIONAL PSYCHOLOGY.**
3. **MENTAL TESTS.**

SANITARY SCIENCE

See Biology.

SOCIOLOGY

1. **INTRODUCTION TO SOCIOLOGY.**
2. **SOCIAL PROBLEMS.**
3. **THE FAMILY.**
4. **THE FAMILY AND THE WAR.**

SPANISH

1. **BEGINNERS' COURSE (Classes).**
2. **SECOND-YEAR SPANISH COMPOSITION. (Correspondence or in classes.)**
3. **SPANISH LITERATURE. (Correspondence.)**

CATALOGUE OF STUDENTS

GRADUATE SCHOOL

NAME	RESIDENCE
Anderson, Jesse May, A.B., A.M.....	Hubbard, Texas
Trinity University, 1916; University of Colorado, 1916, 1918.	
Literature, Philosophy.	
Atwood, Charlotte Frances, A.B.....	Cambridge, Nebraska
University of Colorado, 1918.	
Romance Languages, Education.	
Baum, Eva Margaret, A.B.....	Salina, Kansas
University of Colorado, 1916.	
Chemistry, Geology.	
Blakey, Susan, A.B., B.S.....	Boulder
University of Colorado, 1914; Columbia University, 1915.	
Biochemistry.	
Brockway, Waldo Emerson, B.S. (C.E.).....	Boulder
University of Colorado, 1917.	
Civil Engineering.	
Campbell, Lloyd Hubbard, A.B.....	Boulder
University of Colorado, 1915.	
Chemistry, Physics.	
Cooke, John Daniel, A.B., A.M.....	Boulder
Leland Stanford University, 1914, 1915.	
Latin, Gothic.	
Dawley, William H., Jr., A.B.....	Kansas City, Missouri
Oberlin College, 1895.	
History.	
Dobbs, Louise-Josephine.....	Beatrice, Nebraska
Literature and English Language.	
Dungan, Quintin Randolph, B.S. (Ch.E.).....	Boulder
University of Colorado, 1916.	
Mathematics.	
Farrington, Florence Mildred, A.B., A.M.....	Boulder
University of Colorado, 1913, 1914.	
Romance Languages.	
* Fiske, Rogers Allen, B.S. (M.E.).....	Waukegan, Illinois
University of Colorado, 1914.	
Mechanical Engineering.	
Fraiken, Wanda Irene, A.B., A.M.....	Minneapolis, Minnesota
University of Minnesota, 1909; Columbia University, 1917.	
German.	
Freeland, Haynes J., B.S., M.D.....	Denver
University of Indiana, 1914, 1916.	
Ophthalmology.	
Garbarino, Lucinda Marie, A.B., A.M.....	Boulder
University of Colorado, 1901, 1902.	
Romance Languages, English Literature.	
Garvin, Mary Adelia, A.B.....	Denver
University of Colorado, 1917..	
Romance Languages.	
Gillett, Clarence Herbert.....	Burley, Idaho
University of Colorado.	
Chemistry.	

* Registered in 1917-1918, after the publication of the catalogue.

NAME	RESIDENCE
* Goss, Lawrence Elmer, A.B.....	Olathe
University of Colorado, 1917.	
Education.	
Grant, Anna May, A.B.....	Boulder
University of Colorado, 1902.	
English Literature, Philosophy.	
Grewe, Frances, A.B.....	Boulder
University of Nebraska, 1917.	
Chemistry.	
Guyton, Billy Sylvester, B.S., A.M., M.D.....	University, Mississippi
University of Mississippi, 1910, 1911; University of Virginia, 1913.	
Ophthalmology.	
Hadley, Agnes Lee, A.B.....	Boulder
University of Kansas, 1895.	
French, Philosophy.	
House, Floyd Nelson, A.B.....	Boulder
University of Colorado, 1918.	
Sociology, Philosophy.	
Howard, Jessie Irving, A.B.....	Boulder
University of Colorado, 1917.	
English Literature, Education.	
Howe, William Warren, A.B.....	Pueblo
University of Colorado, 1915.	
Chemistry, Mathematics.	
Hutchinson, Charles Angevine, A.B., A.M.....	Boulder
Wittenberg College, 1916, 1918.	
Physics, Mathematics.	
Jamieson, Elsie Isabella, A.B.....	Bridgeport, Connecticut
Wellesley College, 1910.	
Germanic Languages, Spanish.	
Jenkins, Willie Irene, A.B.....	Emelle, Alabama
University of Alabama, 1911.	
Comparative Literature, French.	
Lewis, William Ray, A.B., A.M.....	Boulder
Friends University, 1910.	
History.	
L'Heureux, Pearl Astella, A.B.....	Nickerson, Kansas
University of Kansas, 1911.	
Literature.	
McDonald, Philip Bayaud, B.S., E.M.....	Gouverneur, New York
Michigan College of Mines, 1910.	
Literature, Philosophy.	
McGrath, Ellert Lewis, B.S.....	Berkeley, California
University of California, 1915.	
Philosophy.	
MacArthur, Edith Helena, B.S.....	Auburndale, Massachusetts
Cornell University, 1914.	
Chemistry, Philosophy.	
MacColl, LeRoy Archibald.....	Idaho Springs
Physics.	
Nelson, Margaret	Denver
English Literature.	
Patterson, Edwin Wilhite, A.B., LL.B.....	Boulder
University of Missouri, 1909, 1911.	
German Philosophy, Sociology.	
Phillips, Nellie Malinda, A.B.....	Boulder
University of Colorado, 1916.	
Design, Drawing.	
Rice, Newton John, A.B.....	Pierce, Nebraska
Bellevue College, 1908.	
Education.	

* Died October 16, 1918.

NAME	RESIDENCE
Romig, Edna Davis, A.B.....	Boulder
De Pauw University, 1911.	
Literature.	
Smith, Bryant, A.B., LL.B.....	Summerfield, North Carolina
Guilford College, 1913; University of Colorado, 1916.	
Sociology, History.	
Snyder, Marjorie May, A.B.....	Colorado Springs
Colorado College, 1915.	
Romance Languages, Latin.	
Strauss, Herman Gross, B.S. (C.E.).....	Denver
University of Colorado, 1917.	
Civil Engineering.	
Taylor, Ralph Oscar, A.B.....	Boulder
Baker University, 1916.	
History, Sociology.	
Thorpe, John George, B.S. (E.E.).....	Boulder
University of Colorado, 1918.	
Electrical Engineering.	
Vincent, Leona Elizabeth.....	Victor
Psychology.	
White, Winifred Harris, A.B.....	Boulder
University of Colorado, 1918.	
Biology.	
Whitney, Parker Richards, B.S. (C.E.).....	Boulder
University of Colorado, 1916.	
Civil Engineering.	
Willison, George Findlay, A.B.....	Denver
University of Colorado, 1918.	
Literature.	
Wilson, Matthew James, Jr., B.S.....	Philadelphia, Pennsylvania
Pennsylvania State College, 1918.	
Geology, Chemistry.	

SCHOOL OF MEDICINE

FOURTH YEAR CLASS

NAME	RESIDENCE
Bowes, William Joseph.....	Denver
Branham, Vernon C., A.M.....	Denver
Day, Roy Joshua.....	Denver
Dewey, Edward Bradley.....	Denver
Faber, Edwin G.....	Tyler, Texas
Graves, Herman Coddington, A.B.....	Canon City
Guthrie, Robert Lee.....	Denver
Humphrys, Ethel Dare.....	Hooper
Humphrys, George Sinclair.....	Hooper
Katzman, Maurice.....	Denver
Kenagy, Fayre Henry.....	Rupert, Idaho
Miller Eli Abraham, A.B.....	Denver
* O'Donnell, Frederick Ross, A.B.....	Ellsworth, Kansas
Price, Richard Craig, A.B.....	Trinidad
Prien, Otto Louis, B.S.....	Denver
Prien, Roland Henry.....	Denver
Reid, Henry Squire, Ph.B.....	Denver
Smith, Willard Arthur.....	Denver
Taylor, Edward Earl.....	Pueblo
Walton, James Blaine.....	Denver
Weinfeld, Samuel.....	Denver

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THIRD YEAR CLASS

NAME	RESIDENCE
Alcorn, Floyd Arthur.....	Boulder
Anderson, Cyrus Walfred.....	Denver
Bach, Walter Leo.....	Denver
Brown, Philip Walling, A.B.....	Colorado Springs
Cooper, Henry Lewis.....	Denver
Farrington, Paul Robert, A.B.....	Boulder
Goldbloom, Isador, A.B.....	Denver
Gregg, Harold William.....	Longmont
Gruber, Charles Merl, Ph.D.....	Boulder
Harner, Clyde Ernest.....	Denver
Heusinkveld, Gerrit.....	Denver
Johnson, Harry Arthur.....	Alta, Iowa
Kretchmer, Otto Sheibel, A.B.....	Denver
Langdon, Erle Edward.....	Buena Vista
Luqueer, Fred Augustus, A.B.....	Olathe
McDonald, Roderick James, Jr.....	Leadville
Markel, Casper.....	Denver
Maul, Robert Franz.....	Denver
Prinzing, Frederic Joseph.....	Denver
Scholer, Henry Charles, Ph.C.....	Bonner Springs, Kansas
Sears, Thaddeus Perce, A.B.....	Denver
Westinghouse, Clarence Donald.....	Colorado Springs

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SECOND YEAR CLASS

NAME	RESIDENCE
Barnard, Hamilton Isham.....	Fowler
Beacon, Dean Nolon.....	Boulder
Dwyer, Paul Keefe.....	Creede
Faus, Robert Bert.....	Boulder
Goldfain, Ephraim.....	Denver
Greig, William McKean, A.B.....	Sterling
Harger, Chalmer Middleton.....	Boulder
Hart, Verling Kersey.....	Cheyenne, Wyoming
Keim, Marie.....	Denver
Perkins, Earl James.....	Denver
Rosario, José Maria del.....	Manila, Phillipine Islands
Rosenbloom, Julius Lee.....	Denver
Ryan, William Joseph, A.B.....	Boulder
Sells, Virgil Emerald.....	Denver
Swanson, William Walfred.....	Braham, Minnesota
Wear, Harry H.....	Meeker
Whitehead, Richard Wilson.....	Breckenridge

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FIRST YEAR CLASS

NAME	RESIDENCE
Adams, Victor Kirk.....	Boulder
Collier, Ross Douglas.....	Denver
Davis, Morris Edward.....	Cheyenne, Wyoming
Fenton, Ward Caldwell.....	Rocky Ford
Flower, Harry James.....	Boulder
Gregory, Greenough.....	Westminster
Harvey, Edward Lee.....	Denver
Keyes, Homer Richard.....	Denver
Mahoney, Louis Emmet.....	Boone, Iowa
Markey, Joseph James.....	Denver
Marr, Mary Annette.....	Denver
Prey, Du Val.....	Denver
Rothwell, William David.....	Denver
Scott, John Terrell, A.M.....	Lynchburg, Virginia
Smith, Edmund Geoffrey.....	Denver

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SPECIAL STUDENTS

NAME	RESIDENCE
Henderson, John Taylor, A.B.....	Boulder
Miller, Howard Stephens, A.B.....	Denver

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SCHOOL OF LAW

THIRD YEAR CLASS

NAME	RESIDENCE
Adams, Cecil Menefee.....	Boulder
Burke, Thomas George, A.B.....	Boulder
Galland, Benjamin Strauss, A.B.....	Wilkes-Barre, Pennsylvania
Reynes, John Francis.....	Boulder
Tinglof, Birger.....	Watertown, Massachusetts

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SECOND YEAR CLASS

NAME	RESIDENCE
Adams, Charles Chenault.....	Boulder
Adams, Wilbur Wolf, A.B.....	Boulder
Brinkley, George Earl, A.B.....	Estes Park
Kochevar, Matthew John.....	Crested Butte
Morente, José.....	Philippine Islands
Shaw, William Robert, A.B.....	Aspen

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FIRST YEAR CLASS

NAME	RESIDENCE
Douglass, Curran Fletcher, B.S.....	Molta Bend, Missouri
Grant, Kenneth Ernest.....	Leadville
Hinkley, Henry Lawrence.....	Sterling
Ireland, Gail Leonard.....	Denver
Kellogg, Lincoln Lewis, A.B.....	Oneonta, New York
Mechem, Philip.....	Chicago, Illinois
Mulvihill, Harry.....	Denver
Rush, William Shafter.....	Salida
Sills, Carlton Thomas.....	Gunnison
Stratton, Marjorie Allen.....	Hillrose
Thomas, Thornton Henry, Jr., A.B.....	Nederland
Thompson, Harold Clark.....	Greeley
Warrington, Jesse Gilbert, A.B.....	Boulder

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SPECIAL STUDENTS

NAME	RESIDENCE
Beer, Dee Howard.....	Boulder
Bennett, Raybern Shad.....	Benton, Illinois
Burton, William Talmage.....	Burnsville, North Carolina
Coonradt, Arthur Vivian.....	Boulder
Downing, Richard Edmund.....	Denver
Foster, Embree Hiller.....	Boulder
Glendinning, Donald Keeble.....	Denver
Hogan, Thomas Patrick.....	Gunnison
Latorra, Dominic.....	Boulder
Lippoldt, Genevieve Louise, A.B.....	Boulder
Toler, John Lemuel.....	Biloxi, Mississippi
Wickert, Marie Ellen, A.B.....	Fort Collins

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COLLEGE OF LIBERAL ARTS*

SENIOR CLASS

NAME	RESIDENCE
Adams, Victor Kirk.....	Boulder
Anderson, Florence Marion.....	Denver
Blackburn, Dorothy Redell.....	Boulder
Block, Ernestine Louise.....	Denver
Bonn, Dorothy Elizabeth.....	Canon City
Brown, Olive Rosamond.....	Louisville
Burke, John Francis.....	Boulder
Caufield, Kathleen.....	Boulder
Claer, Felicita.....	Colorado Springs
Cleveland, Marjorie.....	Boulder
Cleveland, Nellie Charline.....	Boulder
Cohn, Regina Louise.....	Boulder
Collins, Melvin James.....	Creede
Creager, Nellie.....	Rocky Ford
Danielson, Ralph Wesley.....	Boulder
Deck, Jo.....	Boulder
Dobbs, Louise-Josephine.....	Boulder
East, Bessie Belle.....	Trinidad
Eastman, Leslie Klepper.....	Boulder
Fitzgerald, Katherine Dorothy.....	Ogden, Utah
Godfrey, Marguerite Adkins.....	Denver
Gore, Zoe.....	Leadville
Grigsby, Joseph Dewey.....	Wray
Hall, Lothrop Carleton.....	Boulder
Hand, Lauren Chatfield.....	Gypsum
Haring, Effie Pike.....	Boulder
Harrington, John.....	Cheyenne, Wyoming
Hay, Mary Mostyn.....	Ouray
Higgins, Nellie.....	Denver
Hopkins, Faye Marie.....	Denver
Jenkins, Katherine.....	Denver
Johnson, Mabel Margaret.....	Longmont
Keely, Thomas, Jr.....	Denver
Keim, Marie.....	Boulder
Kirkendall, Ruth Esther.....	Fruita
Kistler, Georgie Aloise.....	Denver
Kistler, Ruth.....	Longmont
McMillen, Mildred.....	Boulder
MacColl, Le Roy Archibald.....	Idaho Springs
Mulvihill, Harry Marcus.....	Denver
Mundell, Vada Edith.....	Fowler
Neill, Ella Marjorie.....	Greeley
Nelson, Margaret.....	Denver
Olinger, Elgin Dutton.....	Franklin, Illinois
Olson, Vera Anna.....	Denver
Pitkin, Amy.....	Denver
Pittman, Jo.....	Boulder
Powers, Nellie Sabena.....	Boulder
Reed, Irma Lenore.....	Jerome, Idaho
Robinson, Carlton Crew.....	San Acacio
Rose, Lelia Mabel.....	Pueblo

* Students marked with an asterisk are registered in the College of Home Economics and Social Service.

NAME	RESIDENCE
Rosenberg, Helen	Glenwood Springs
Saunders, Ray Walter	Boulder
Schiller, Edna Elizabeth	Fort Morgan
Shaw, Harriet Bliss	Cripple Creek
Sherman, Marguerite Elizabeth	Boulder
Sims, Irene Neill	Monte Vista
Simpson, Olive Margaret	Fowler
Spencer, Floyd Albert	Boulder
Thomas, Randolph Dyer	Boulder
Thompson, Harold Clark	Greeley
Tuflly, Arla Evangeline	Grand Junction
Vincent, Leona Elizabeth	Victor
Wells, Horace Palmer	Denver
Whitehead, Richard Wilson	Breckenridge
Willison, Andrew Brunton	Denver
Wittemyer, Florence Helen	Boulder

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JUNIOR CLASS

NAME	RESIDENCE
* Adamson, Ruby Kendall	Boulder
Atkins, Elmer Verdon	Longmont
Bailey, Blanche Grace	Boulder
Bair, Dorothy Helen	Denver
Baxter, Gladys Elizabeth	Rocky Ford
Bell, Hazel Eulalia	Silverton
Bimson, Edith Ellen	Berthoud
Bohn, Margaret May	Longmont
Bolles, Helen Louise	Denver
Borden, Neil Hopper	Boulder
Bradley, Melcena Verceda	Sedalia, Missouri
Branham, Sara Elizabeth	Boulder
Breckenridge, Robert Glenn, Jr.	Pueblo
Buchheim, Walter August	Leonardville, Kansas
Burke, Robert Emmett	Boulder
Carley, Fayth Meda	Cheyenne, Wyoming
Chisholm, Theodore Aeneas	Denver
Christopher, Beulah	Wellington
Claer, Annet Doris	Colorado Springs
Colestock, Trilby Ruth	Boulder
Crouch, Marjorie Schoppe	Fort Morgan
Curry, Margaret Eleanor	Boulder
* Daily, Francis Elizabeth	Beloit, Kansas
Dale, Marion B.	Denver
Davis, William Powell	Sterling
Denslow, Rachel Irene	Arvada
Dickason, Deane Henry	Denver
Donaldson, Frances	Fort Washakie, Wyoming
Donehue, Frances Selina	Denver
Downs, Doris	Boulder
Drach, Gertrude Magdalene	Denver
Duce, Katherine Frances	Boulder
Durward, Robert Harland	Boulder
Eaton, Phyllis Mary	Boulder
Ebert, Alice Ladd	Boulder
Eddy, Priscilla Henrietta	Boulder
Elliott, Ruth	Merino
Fees, Hazel Adeline	Boulder
Ferguson, Alex McFarlane	Stranraer, Saskatchewan, Canada
Fleming, Helen Margarie	Denver
Fleming, Nancy Amelia	Boulder
Gill, Lucille Otis	Fort Morgan
Ginther, Sarah Beverly	Denver

NAME	RESIDENCE
Griffith, Helen Jessie.....	Denver
Gunter, Alma May.....	Columbia, Mississippi
Hanger, Paul Cornelius.....	Colorado Springs
Harvey, Effie Marie.....	Boulder
Hauck, Evangeline S.....	Rocky Ford
Hawkyard, Stella Grace.....	Olathe
Hendrickson, Victor James.....	Denver
Hepplewhite, James Gladstone.....	Canon City
Holcomb, Janet Lillian.....	Boulder
Hopkin, Eunice Maxwell.....	Denver
Hummel, Elizabeth Sophia.....	Boulder
Huntzicker, Paul.....	Madison, Wisconsin
Husted, Helen May.....	Denver
Jackson, Dorothy Gale.....	Greeley
* Johnson, Faith.....	Denver
Johnston, Ruth Mary.....	Idaho Springs
Kappler, Edwin Otto.....	Denver
Keith, Dorothy Ware.....	Denver
Kiker, Sada.....	Boulder
Knowlton, Donald Ryder.....	Denver
Kuyer, Helen.....	Trinidad
* Lightfoot, Grace E.....	Cripple Creek
Lyster, Elsie Muriel.....	Greeley
McCormac, Alice Irene.....	Boulder
McGinnis, Paul.....	Boulder
Macfarlane, Hattie Jean.....	Edgewater
Macgregor, Vanda Maud.....	Golden
Maier, Frank Julian.....	Boulder
Mason, Marian.....	Boulder
Merrill, Helen.....	Lamar
Merryfield, Mabel Pearl.....	Boulder
Meyer, Freda Emma.....	Olathe
Michael, Maude Alice.....	Denver
Mills, Glenn Everett.....	Boulder
Murphy, John Russell.....	Denver
Nelson, George Richard.....	Denver
O'Malia, Regina Catherine.....	Leadville
Perini, Vincent Charles, Jr.....	Denver
Peyton, Marguerite Shirley.....	Boulder
Purmort, Eunice Beryl.....	Boulder
Randolph, Ronald Fitz.....	Correctionville, Iowa
Reed, Russell Mulette.....	Boulder
Richardson, Charleen Dale.....	Denver
Rohde, Amanda Rhoda.....	Boulder
Royce, Lourie Merle.....	Boulder
Ryan, John Harold.....	Maryville, Missouri
Sandhouse, Grace Adelbert.....	Boulder
Selvy, Laura Etta.....	Clayton, New Mexico
Skiff, Marjorie.....	Boulder
Slane, Ruth.....	Saguache
Sloan, Helen Roberta.....	Durango
Smercheck, Bernice Grace.....	Boulder
Snider, James Birch.....	Denver
Swanson, William Walfred.....	Braham, Minnesota
Swayne, Ida Loyd.....	Boulder
Sweet, Irena Elladee.....	Boulder
Swofford, Mary Elizabeth.....	Kansas City, Missouri
Tarkoff, Irma.....	Boulder
Terwilliger, Mary Elizabeth.....	Boulder
Thompson, Elizabeth Alice.....	Holyoke
Thomson, Eva May.....	Glendale, Arizona
Tippett, Donald Harvey.....	Boulder
Traxler, Ralph Newton.....	Lamar
Trolinger, Lelia Gertrude.....	Clinton, Missouri

NAME	RESIDENCE
Updike, Mary Ella.....	Trenton, New Jersey
Vivian, Chauncey Higgins.....	Golden
Vowell, Catherine Elizabeth.....	Littleton
Warren, Edward De Witt.....	Fruita
Watt, Marion Virginia.....	Denver
Webb, Charles Wilson.....	Denver
White, James Herschel.....	Detroit, Michigan
White, Vivian	Independence, Missouri
White, Wilford Lenfesty.....	Boulder
Wiggins, Loretti Seattle.....	Canyon, Texas
Williams, William McKinley.....	Elbert
Willson, Kenneth Mack.....	Lusk, Wyoming
Winter, Henry Abraham, Jr.....	Denver
Wolf, Thomas Olin.....	Boulder
Woolard, Edgar	Denver
Wray, Ralph Merritt.....	Olathe
Wright, Agnes Mack.....	Boulder
Young, Isabel Scott.....	Walsenburg
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SOPHOMORE CLASS

NAME	RESIDENCE
Adams, Frank Charles.....	Denver
Adams, Jane	Boulder
Adams, Marvyn Smith.....	Denver
Akers, Byron Lionel.....	Denver
Alenius, Alfild Margaret.....	Denver
Allen, Yolanda Shaw.....	Boston, Massachusetts
Allison, Orpah	Paonia
Anderson, Georgia Christina.....	Denver
Anderson, Hazel Beatrice.....	Pueblo
Bare, Orlena	Denver
Barnhart, Lucy Persis.....	Denver
Barrett, Josephine Rose.....	Boulder
Bean, Helen De Kalb.....	Hot Springs, South Dakota
Benson, Lillian Elvira.....	Boulder
Birnbaum, Harold Fischlowitz.....	Denver
Bitner, Katherine Harriett.....	Boulder
Bolles, Esther Janet.....	Denver
* Boot, Helen Elizabeth.....	Denver
Boulware, Lois Irene.....	Denver
Bowler, Mary Angela.....	Denver
Boyle, D. McLeod.....	Denver
Breyfogle, Eva May.....	Boulder
Breyfogle, Louise Amy.....	Boulder
Briggs, Robert Ernest.....	Cedaredge
Brown, Dorothy	Pueblo
Bunyan, Mary Frances.....	Berthoud
Burkholder, Clarence Dewey.....	McPherson, Kansas
Burrows, Alice	Denver
Bushey, Ray Allen.....	Manzanola
Campbell, Dorothy May.....	Denver
Campbell, Pearl	Loveland
Cheedle, Roxana La Verne.....	Grand Junction
Chenault, Helen Virginia.....	Boulder
Clark, Andrew Giles.....	Boulder
* Coates, Elizabeth Lola.....	Bristol
Cobbey, Lillian West.....	Denver
Coghlan, Anne Theoline.....	Kankakee, Illinois
Cole, Rilla Carol.....	Pueblo
Collins, Norma Dorothy.....	Gunnison
Costello, Marguerite Marie.....	Denver
Craig, Elberta Louise.....	Boulder

NAME	RESIDENCE
Curtis, Gwendolyn Ann.....	Castle Rock
Dawkins, Bernice Margaret.....	Augusta, Illinois
Deidesheimer, Marguerite	Denver
Dobbs, Hugh Justin, Jr.....	Beatrice, Nebraska
Dole, Mary Ellen.....	Boulder
Downing, Richard Edmund	Denver
Duggan, Helen Gordon.....	Denver
Edgar, Marjorie	Weatherford, Texas
Edwards, Eunice Vaughn.....	Victor
Estrin, Morris Moses.....	Denver
Evans, Matilda Hedges.....	Denver
Fahnestock, Ann	Denver
Ferkel, Ruth Laura.....	Canon City
Ferris, Willa Ferne.....	Denver
Field, John Thomas.....	Denver
Foster, Lois May.....	Longmont
Friedman, Arthur Sylvan.....	Denver
Fulghum, Carl Whitney.....	Glenwood Springs
* Gahagen, Agnes	Boulder
Gary, Florence Nancy.....	Pueblo
Gertsen, Elizabeth	Boulder
Gittner, Wilma	Denver
Glenn, Dorothea Reger.....	Denver
Gorce, Lila May.....	Boulder
Goudie, Jessie Mae.....	Denver
Graham, Mona Mary.....	Glenwood, Iowa
Griffith, Mary Lois.....	Estes Park
Hall, Ellis Azelle.....	Boulder
Hall, Emilie Elizabeth.....	Denver
Hall, Marguerite	Boulder
* Hall, Mary R.....	Denver
Handy, Eleanor Dora.....	Boulder
Hardy, Mary Madeline.....	Denver
Harger, George Ralph	Boulder
Hartman, Katherine	Longmont
Hatter, Marie Victoria.....	Denver
Havens, George Douglass.....	Denver
Henry, Mary Huston.....	Pueblo
Hodge, Fleeta Clarissa.....	Boulder
Hodge, Inez Fae.....	Boulder
Hopkins, Hugh John.....	Denver
Hoskins, Caddie Heath.....	Milton, Iowa
Huff, Marian Moorhouse.....	Detroit, Michigan
Jackson, Sam	Denver
Jennings, Howard W.....	Moberly, Missouri
Jones, Margaret Ruth.....	Littleton
Jones, Vera Heinly.....	Denver
Judelovitz, Simon	Denver
* Kasten, Madge Elizabeth.....	La Junta
Katz, Sarah Ruth.....	Denver
Killgore, Anthony Jay.....	Denver
Kline, William Wallace.....	Denver
Knox, Margaret Matilda.....	Denver
Laff, Herman Isaac.....	Denver
Lane, Helen Maybelle.....	Holyoke
Langley, Luverne Gove.....	Denver
Lavington, Charles Stephen.....	Flagler
Lawton, Margaret	Colorado Springs
Lee, Samuel Morris.....	Fort Morgan
Le May, Vera.....	Concrete
Lester, Katherine Wheeler.....	Boulder
LeVeque, Earl Mehlun.....	Boulder
Lilly, Evelyn Idonia.....	Cripple Creek
Lindberg, Eugene Theodore.....	Pueblo

NAME	RESIDENCE
Linsley, Elizabeth	Boulder
Lovejoy, Margaret	Jefferson, Iowa
Lovelace, Stuart Harris	Boulder
McColm, Glenn C.	Denver
McInnes, Donald	Boulder
McLucas, Mary McRae	Boulder
McNeece, Anna	Leadville
MacArthur, Emma Glen	Monte Vista
Madden, Louis Edward	Denver
Malm, John Chester	Westminster
Martinez, José Eliseo	Trinidad
Mathers, Caress Mae	Boulder
Matthews, Ruth Estelle	Manzanola
Mellow, Ruth Ethel	Denver
Mentgen, Frances Marguerite	Sterling
Merrill, Richard Lee	Lamar
Miller, Sylvester Jay	Gunnison
Moncrieff, James Elwood	Boulder
Morning, Elizabeth	Denver
Moulton, Elizabeth Gammill	Clifton
Murphy, Mildred K.	Decatur, Illinois
Musgrave, Ervin Roy	Longmont
Musser, John McCoy	Denver
Naylor, Herbert Charles	Denver
Nelson, Lila Marie	Leadville
Nelson, Lloyd Vernon	Claude
Nichols, Pearl Vallie	Victor
Nimmo, Mary Ellen	Cheyenne, Wyoming
Noxon, Frances Clare	Boulder
O'Dea, Helen Louise	Leadville
Page, Richard Martin	Denver
Parsell, Bertha May	Canadian, Texas
Patton, Marshall Davis	Boulder
Pelta, Harold Earl	Cripple Creek
* Potter, Dorothy	Boulder
Price, Cecil Bradford	Denver
Price, Mary Ellen	Cripple Creek
Purcell, Margaret Mary	Grand Junction
Reardon, Raymond Francis	Denver
Reed, Edward Walker	Denver
Rethlefsen, Helen	Boulder
Reynolds, Eleanor Ruth	La Junta
Reynolds, Henry Etta	Boulder
Roberts, Doris	Denver
Robinson, Clarence William	San Acacio
Robinson, Warren Alfred	Idaho Springs
Rosner, David	Boulder
Saunders, Josephine Mildred	Boulder
Savage, Raymond James	Denver
Scheck, Mary Augusta	Olathe
Seavy, Vasco Gerald	New Raymer
Sherrill, Lena Patricia	Denver
Shoaf, Dorothy Noyes	Taylor, Texas
Short, Edna Louise	Denver
Simon, John Dewey	Florence
Simpson, Frances	Fowler
Smith, Margaret Virginia	Grand Junction
Sowter, Grace	Great Falls, Montana
Spackman, Ellis Leeds, Jr.	Colorado Springs
Spencer, Richard Carleton	Boulder
* Springer, Mary Ruth	Gilman City, Missouri
Stahl, Mary	Grinnell, Iowa
Stearns, Joel Wilder, Jr.	Denver
Strange, Helen Amelia	Boulder

NAME	RESIDENCE
Stratton, Rosemary	Hillrose
Swanson, Arveda Katherine.....	Georgetown
Taylor, Overton Hume.....	Nunn
Thompson, Lester Emmit.....	Hugo
Thompson, Warren Osborne.....	Boulder
Vagnino, Louis Salvatore.....	Denver
Vance, Inez Lillian.....	Blanco
Vawter, Viola	Fowler
Viecelli, James Dominic.....	Sopris
Wahlberg, Edgar Malcom.....	Denver
Walker, Mary Eugenia.....	Boulder
Walter, Dorothy Lillian.....	Denver
Ward, Thomas	Denver
Wellman, Augusta Lee.....	Mangum, Oklahoma
Wellman, Harry O.....	Mangum, Oklahoma
White, Mary Virginia.....	Denver
Whitney, Caroline Elizabeth.....	Boulder
Williams, Addison Leclerq.....	Denver
Williams, Beatrice Emily.....	Denver
Williams, James Reid.....	Yampa
Willson, Fred Brooks.....	Lusk, Wyoming
Wittemyer, John	Boulder
Wood, Edward Langstrath.....	Fort Logan
Woods, Gladys Margaret.....	Pueblo
Yaker, David N.....	Denver
Young, Mildred Arline.....	Boulder
Zarit, John Isadore.....	Denver

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FRESHMAN CLASS

NAME	RESIDENCE
Abbott, Marion Elizabeth.....	Denver
Ahlberg, Ruth	Odebolt, Iowa
Allen, John Carlin.....	Denver
Allen, Mildred Madeline.....	Rocky Ford
Allison, Charles Klersey.....	Hugo
Allison, Marianne	McPherson, Kansas
Allyn, Ted Welborn.....	Maher
Ames, Betty Delano.....	Roswell, New Mexico
Anderson, Arthur Fred.....	Denver
Anderson, Leonard	Fruita
Anderson, Roscoe Herman.....	Greeley
Andres, Lena Marie.....	Denver
Andrew, Warren Melvin.....	Boulder
Andrews, Mary Ellsworth.....	Boulder
Ashenhurst, John M.....	Chicago, Illinois
Baker, Mary Elizabeth.....	Pueblo
Ball, Reuben Creswell.....	Meeker
Bardwell, Eva Gertrude.....	Denver
Barnard, Margaret Evelyn.....	Boulder
Barney, Horace J.....	Manzanola
Barrett, Almira	Denver
Bartow, Earl C.....	Brighton
Bassett, John Alexander, Jr.....	Alamosa
Bates, Irene Templeton.....	Grand Junction
Baxter, Julia Eileen.....	Longmont
Beale, Claire Jewell.....	Boulder
Bean, Hildred Elizabeth.....	Hot Springs, South Dakota
Beatty, Helen Hagerman.....	Denver
Beckman, Ethel Alvina.....	Denver
Bell, Rodney Stanford.....	Glenwood Springs
Bennington, George H.....	Center

NAME	RESIDENCE
Bever, Fern	Boulder
Blackburn, Lois Delight.....	Boulder
Blackmore, John H.....	Grover
Blade, Frank Joseph.....	Denver
Blair, Harrison D.....	Sterling
Bleasdale, Eleanor Irene.....	Brush
Blom, Birgitta	Boulder
Blosser, Edith Bell.....	Boulder
* Blosser, Iva Caroline.....	Boulder
Boaz, Louise McLain.....	Denver
Bohn, Doris Lucile.....	Longmont
Bolam, Jack	Boulder
Bonesteel, Elise Louise.....	Denver
Bonnell, Charles Preston.....	Pagosa Springs
Borland, Harold G.....	Flagler
Brazil, Mary Lenore.....	Colorado Springs
Breitenstein, Jean Sala.....	Boulder
Brooks, Dwight R.....	Fort Morgan
Brooks, Willet	Cripple Creek
Brown, Bertha	Denver
Brown, Clayton Hague.....	Boulder
Brown, Frank Earl.....	Fort Collins
Bruce, Caroline Ann.....	Montrose
Bryan, Lynne Eugene.....	Cottonwood Falls, Kansas
Buckland, Bruce	Walsen
Buie, Edythe Ben.....	Boulder
Burch, Neal	Hayden
Burk, Georgina Meyer.....	Boulder
Burke, Loretta M.....	Boulder
* Burt, Mabel Frederica.....	Liberal, Kansas
Button, Doris Edwina.....	Denver
Byram, John Perkins.....	Mesa
Camp, Vivian	Denver
Campbell, Myra	Arvada
Carlson, Mabel Georgina.....	Julesburg
Carlson, William Ferdinand.....	Canon City
Carmody, Ruth	Denver
Carpenter, Mary Helen.....	Pueblo
Catchpole, Jay Lorin.....	Pagosa Springs
Catlin, Mabel E.....	Augusta, Illinois
Caufield, Lillian	Boulder
Cawood, Verne Carroll.....	Boulder
Chandler, Marie Elizabeth.....	Stratton
Chapman, Lloyd Earl.....	Sterling
Chapman, Sara.....	Monte Vista
Charlesworth, Harry William.....	Erie
Chernyk, Maurice	Denver
Chesebro, Delta Mary.....	Boulder
Chiesa, Mark Victor.....	Des Moines, Iowa
Churchill, Roy Douglas.....	Bedford, Iowa
Clark, Helen Lucile.....	Denver
Clayton, Anne Elizabeth.....	Hannibal, Missouri
* Clayton, Margaret Morrison.....	Hannibal, Missouri
Cluphf, Lulu Belle.....	Boulder
Coe, Florence Alberta.....	Boulder
Cole, Julia Moore.....	Pueblo
Collett, Lela Ferne.....	Creston, Iowa
Collins, Lucile Esther.....	Boulder
Collins, Ludlow Gale.....	Boulder
Connor, Howard Marcus.....	Pueblo
Consley, Inez	Grand Junction
Cook, Roxy.....	Independence, Missouri
Coombs, Viola Frances.....	Boulder
Corcoran, Michael Thomas.....	Aspen

NAME	RESIDENCE
Corcoran, Robert Edward.....	Chicago, Illinois
Couch, Dora May.....	Merino
Cowan, Lucile Harriett.....	Denver
Cowdery, Ruth.....	Denver
Crawford, Gladys Ida.....	Grand Junction
Cunning, John E.....	Lonoke, Arkansas
Curtis, Ralph George.....	Denver
Cutler, Edwynne Irene.....	Fort Morgan
Daily, Ruth Bridgid.....	Beloit, Kansas
Dake, Ruth.....	Denver
Davis, Benjamin B.....	Cheyenne, Wyoming
Davis, Charles Moler, Jr.....	Denver
Davis, Frank Burr.....	Greeley
Delliquadri, Hector Paul.....	Pueblo
Devine, Agnes Cecilia.....	Fowler
Dew, Ivy Eloise.....	Fort Morgan
Dickson, Robert William.....	Denver
Dimm, Florence Louise.....	Denver
Doherty, Muryl Marvin.....	Boulder
Donohoe, Victor Harold.....	Riverton, Wyoming
Douglas, Frederic Huntington.....	Evergreen
Doyle, Frances.....	Denver
Drach, Mildred Agnes.....	Denver
Draper, Edwin Jonathan.....	Greeley
Drinkwater, Lucile.....	Denver
Duffy, James Donald.....	Denver
Eberenz, Jessie Brown.....	Pueblo
Ebert, Gladys.....	Boulder
Eckels, Margaret.....	Boulder
Eisnor, Alvina Nova.....	Briggsdale
† Eldridge, Willie Bell.....	Augusta, Arkansas
Ellis, Mildred Frances.....	Denver
Ellison, Edward Burns.....	Denver
Endicott, Alice.....	Canon City
Esser, Joseph, Jr.....	Canon City
Evans, Catharine Bothwell.....	Chillicothe, Ohio
Evans, Naomi Ruth.....	Boulder
Ewing, Gladys Ethel.....	Boulder
Eynon, Clarence.....	Durango
Faber, Mary Edith.....	Grand Junction
Fahnestock, Sarah.....	Denver
Falconer, Gladys.....	Pueblo
Farnsworth, J. Dace.....	Fort Morgan
Farr, Duncan Lawton.....	Flagler
Feinman, Charles.....	Boulder
* Fitch, Mable Grant.....	Telluride
Flindt, Albert George.....	Arriba
* Foote, Barbara.....	Paonia
* Foote, Elizabeth.....	Paonia
Fordham, Genevieve.....	Glenwood Springs
Foster, John McEwen, Jr.....	Denver
Frame, Marjorie.....	Sterling
Fredericks, Gladys Leahola.....	Nucla
Freedheim, Eugene H.....	Denver
Freedle, Lucien.....	Saguache
Freeman, Rosalie Belle.....	Mancos
Fuller, Norman Graham.....	Loveland
Gabriel, Ruth.....	Denver
Galbreath, Gladys Armstead.....	Denver
Garvin, Helen Louise.....	Boulder
Gaunt, William Woodruff.....	Denver
* Gibson, Clara.....	El Paso, Texas

NAME	RESIDENCE
Giffin, Luman Cushman.....	Boulder
Gilbertson, Mildred Jean.....	Fort Morgan
Gildersleeve, Dorothy Clarke.....	Denver
Gillett, Ivan Parkin.....	Boulder
Godfrey, Allen Robert.....	Greeley
Goldberg, Edith Lesly.....	Denver
Grant, Lawrence Edward.....	Leadville
Green, Dorothy.....	Crowley
Green, Louis.....	New York City, New York
Greenwald, Isadore Louis.....	Denver
Griffin, Beatrice.....	Buffalo Gap, South Dakota
Griffith, James Eidson.....	Denver
Griffith, John Edward.....	Pueblo
Gross, Ida Baylye.....	Denver
Guggenheim, Bernece.....	Denver
Guillet, Ethel Gladys.....	Cortez
Hadady, Helene Clark.....	Boulder
Haesler, Dorothy Marie.....	Georgetown
Haines, Gladys Katherin.....	Boulder
Haley, Lura Ernestine.....	Buena Vista
Hammond, Fred Charles.....	Glenwood Springs
Haney, Hazel.....	Pittsburgh, Pennsylvania
Hansen, Floyd A.....	Mapleton, Iowa
Harmon, Julia Lettisa.....	Lafayette
Harrington, Ruth.....	Cheyenne, Wyoming
Harris, Anne-Wilkinson.....	Silver City, New Mexico
Harrison, Alfred William.....	Beaumont, Texas
Hart, Edward Baldwin.....	Denver
Hart, Howard Webster.....	Denver
Hartwell, Dorothy Frances.....	Haxtun
Hayes, Helen.....	Boulder
Hecker, Marian K.....	Monte Vista
Hellstern, Edna Isabelle.....	Pueblo
Hewlitt, Fred Albert.....	Erie
Hick, Lawrence L.....	Delta
Hicks, Nelson.....	Denver
Hill, Mathilda Barton.....	Boulder
Hinton, Curtis Barkla.....	Grand Junction
Hirst, Georgia La Fontaine.....	Cheyenne, Wyoming
Holland, Josiah Gilbert.....	Denver
Holmberg, Helen Beatrice.....	Idaho Springs
Holmes, Helen Mildred.....	Denver
Holmgrain, Carl A.....	Cripple Creek
Hopkins, Gladys.....	Denver
Hore, William John.....	Goldfield
Hough, Margaret Ruby.....	Denver
Howell, Chester E.....	Denver
Hubbard, Katherine Crawford.....	Boulder
* Hughes, Sarah Ellen.....	Boulder
Humphreys, Moreland Mason.....	Denver
Hunt, Evelyn.....	Raton, New Mexico
Hunt, Rupert Lowell.....	Florence
* Huntington, Ruth Elizabeth.....	Denver
Hurst, H. Euvera.....	Montrose
Hyde, Mildred Ruth.....	Denver
Iden, Zepha Maude.....	Bigelow, Missouri
Ingalls, Martha Elizabeth.....	Hygiene
Innes, Ernest.....	Trinidad
Irish, Marthan Marie.....	Boulder
James, Edilya.....	Denver
Jankovsky, Joseph Charles.....	Sedgwick
Johnson, Ruby.....	Niwot
Johnson, Stella.....	York, Nebraska
Johnson, Winfred Harry.....	Niwot

NAME	RESIDENCE
Johnston, Anna	Louisville
Jones, Dorothy May.....	Littleton
Jones, Frederick Lee.....	Limon
Karcher, Willard Joseph.....	Denver
Kellogg, Richard Aaron.....	Boulder
Kelly, Floyd Wesley.....	Nunn
Kemmy, Marion Margaret.....	Boulder
Kemper, Lawrence Ben.....	Denver
Kemper, Lynn Smith.....	Denver
Kenagy, Louise Elizabeth.....	Rupert, Idaho
Kersey, Clara Louise.....	Boulder
Kersey, John M.....	Boulder
Kincaid, Laura Kornelya.....	La Veta
King, F. June.....	Denver
King, Nellie	Denver
Kirk, William Corbett.....	Long Beach, California
Kistler, Hattie Ethel.....	Longmont
Kistler, Ruth Irene.....	Denver
Ladd, Stanley Marvin.....	Denver
Lail, Lois	Denver
Laughlin, Bert	Trinidad
Lawler, Hazel Irene.....	Fowler
Lawson, Fern Maurine.....	Boulder
Leckenby, Marion Minerva.....	Denver
Leckenby, Maurice Wilmot.....	Denver
LeRossignol, Mary Alice.....	Boulder
Lewis, Perley Mitchell.....	La Junta
Liebhards, Georgia G.....	Denver
Lindsey, Maude Louise.....	Iowa Park, Texas
Long, Margaret Alberta.....	Arena
Longfellow, Arthur Grove.....	Denver
Lorber, Milton Bryan.....	Denver
Loser, Julia Elizabeth.....	Denver
Lurton, Christine	Pueblo
McClellan, Minnie Jane.....	Denver
McCracken, Alfred Huntley.....	Nederland
* McDuffie, Marion Elden.....	Jefferson, Iowa
McEwen, Theodore R.....	Holyoke
McGowen, Aldean	Denver
McGrew, Ava Jean.....	Fort Morgan
McKeeman, L. Stanford.....	Fort Wayne, Indiana
McKinley, Carl Dewey.....	Ault
McLaughlin, Margaret Caroline.....	Trinidad
McNerney, William Eugene.....	Goldfield
McVay, Roy Bruce.....	Denver
Macfarlane, Anna May.....	Coalmont
MacNaughton, Laura Church.....	Denver
Macomb, Richard Callen.....	Durango
Maddocks, Raymond Edward.....	Aspen
Mahan, Irma Jane.....	Longmont
Marihugh, Kathryn Agnes.....	Idaho Springs
Marshall, Agnes	Boulder
Marshall, Samuel Edmund.....	Denver
Mason, Martha Alvina.....	Alamosa
Mason, Mary Eleanor.....	Denver
Matthes, Helen M.....	Canon City
Maxville, Anne	Paonia
Mayall, James Tully.....	Boulder
Mealey, Bryan Jennings.....	Wray
Meeken, Duard O.....	Brighton
Metz, Mildred La Von.....	Pueblo
Michell, Florence	Ortonville, Minnesota
Millard, Lester B.....	Pueblo
Miller, Israel	Denver

NAME	RESIDENCE
Miller, Mildred Elizabeth.....	Boulder
Mitchell, John Charles.....	Boulder
Mogge, John Harry.....	Denver
Mohr, Carroll Shoner.....	Hardin
Moore, Ellis Nathaniel.....	Boulder
Moran, Hazen Leon.....	Pueblo
Murray, Zebuline Herndon.....	Trinidad
Muth, Harold Elbridge.....	Denver
Neeley, William B., Jr.....	Longmont
Neff, Ezra.....	Riverside, California
Nelson, Edith Ubricka.....	Leadville
Ness, Ragnar John.....	Denver
Newcomb, Mary Frances.....	Colorado Springs
Nichols, Lottie Irene.....	Ault
Nicholson, Coralie Rozelle.....	Boulder
Nicholson, Mary Belle.....	Boulder
Noggles, Mary Ruth.....	Boulder
Noland, James M.....	Denver
Nordstrom, Ida.....	Grand Valley
Norris, Maude Eudora.....	Cripple Creek
Norton, James Theodore.....	Canon City
Noxon, Florence Kelso.....	Boulder
Nygren, Wendia M.....	Nucla
O'Connor, Mae.....	Elsie, Nebraska
Oldenburg, Ray William.....	Glenwood Springs
O'Meara, Marcelline Dorothy.....	Boulder
O'Meara, Mariam Josephine.....	Boulder
Ozanne, Henry Joseph.....	Denver
* Palmer, Herma De.....	Denver
* Palmer, Vera.....	Boulder
* Pantle, Emma Bertha.....	Ordway
Park, Hazel Anna.....	Kutch
Paulicheck, Martha Josephine.....	Overland
Payne, Ralph Tresise.....	Nederland
Peavy, George James.....	Denver
Perry, Leslie S.....	Boulder
Petersen, Elsie Rebecca.....	Lander, Wyoming
Peterson, Herman Carl.....	Cripple Creek
Phillips, Clarence Linden.....	Limon
Pickens, Percy Ralph.....	La Veta
Pike, Lola Vivian.....	Boulder
Pitts, Inez Magnolia.....	Denver
Pope, Maxy Alice.....	Canon City
Port, Dorothy Winifred.....	Palisade
Powell, Frederick.....	Denver
Powers, Marjorie Elizabeth.....	Boulder
Proffitt, Elvie Gladys.....	Boulder
Purvis, Maggie May.....	Las Animas
Rait, Mary.....	Palisade
Rathbun, Clifford Charles.....	Burlington
Read, Alice Esther.....	Denver
* Reading, Helen.....	El Paso, Texas
Reed, Mabel Alice.....	Wray
Reid, Bessie Virginia.....	Windsor
Rendle, James Alfred, Jr.....	Denver
Reuter, Henrietta May.....	Aspen
Robinson, Philip M.....	Denver
Rogers, Dorothy Agnes.....	Denver
Runyon, Dwight Andrew.....	Manzanola
Rusman, Edward Syral.....	Denver
Russell, Denzell V.....	Danville, Iowa
Sanborn, Louise Caroline.....	Denver
Sayer, Parke J.....	Holly
Scanlan, Francis Shannon.....	Denver

NAME	RESIDENCE
Schaal, Russell W.....	Simla
Schwepe, Florence Lois.....	Boulder
Scofield, Morris Henry.....	Brighton
Scott, John Lee.....	Littleton
Sellers, Ruth Katheryn.....	Denver
Sethman, Harvey Thurston.....	Denver
Seubert, Ethel Otila.....	Canon City
Seubert, Mary	Denver
† Shaver, Harold E.....	Meeker
Shay, James Harold.....	Salida
Shelton, Dorothy Dinsdale.....	Leadville
Shepardson, Margaret	Fort Collins
Sherman, Nancy Louise.....	Denver
Shimeall, Robert C.....	Goodland, Kansas
Siggins, Ernest L., Jr.....	Denver
Simpson, George Gaylord.....	Denver
Simpson, Margaret S.....	Fort Morgan
Skinner, Olive-Anne	Denver
Smith, Davis G.....	Manzanola
Smith, Dorothy Elizabeth.....	Boulder
Snider, Helen	Denver
Solt, Leland	Denver
Solt, Lois	Denver
Stafford, Walter Ellsworth.....	Canon City
Stagg, Arvilla Meyer.....	Chicago, Illinois
* Standish, Marie Louise.....	Boulder
Stark, Francis Middleton.....	La Junta
Stauffer, Donald Alfred.....	Denver
Stebbins, Norma	Palisade
Stewart, Dorcus	Loveland
Stockham, George Dewey.....	Sedgwick
Strang, Stephen Barton.....	Denver
Strauss, Deena Spivak.....	Boulder
Stubbs, Lucile	Denver
Stultz, Charlotte C.....	Denver
Sutton, James E.....	Denver
Sutton, Richard Manliffe.....	Denver
Sweet, Walden E.....	Carbondale
Swetnam, John Franklin.....	Blanca
Taylor, Ernest Wright.....	Pueblo
Taylor, Weston E.....	St. Louis, Missouri
Thomas, Herschell Stephens.....	Flagler
Thomas, Mary Isabelle.....	Boulder
Thompson, Eldridge Cummings.....	Las Animas
Thompson, Frances Lois.....	Holyoke
Thompson, M. Wood.....	Las Animas
Thornton, Frank Greene.....	Edgemont, South Dakota
Tidel, Bertram Boyd.....	Greeley
Toerge, Dorothea Miriam.....	Colorado Springs
Tomes, Matilda	Boulder
Townsend, Alamo Marie.....	Paonia
Trowbridge, John L.....	Denver
Turney, Alice Elizabeth.....	Loveland
Turnquist, Clarence Algot.....	Cripple Creek
Twombly, Lena Marie.....	Fort Lupton
Tyler, Henry Teller.....	Denver
Vickery, Howard F.....	Denver
Wagner, George Napoleon.....	Boulder
Wagner, Harold Biegel.....	Denver
Waite, Leland Harvey.....	La Junta
Walbridge, Clarence Friedrich.....	Durango
Wallace, Bruce	Denver

† Died October 16, 1918.

NAME	RESIDENCE
Walter, Harold John.....	Pueblo
Walton, Clara	Kimberly, Idaho
Webster, Bethuel Matthew, Jr.....	Denver
Whitaker, William Henry.....	Shelbyville, Illinois
White, Elizabeth	Boulder
White, Lois Alberta.....	Norwood
White, Philip Weaver.....	Denver
White, William Faye.....	Fruita
Wilcox, Helene Murray.....	Denver
Wilkinson, Oscar Stevenson.....	Washington, District of Columbia
* Williams, Alta	Boulder
Williams, Ethel Elizabeth.....	Ucross, Wyoming
Williams, Florence Alberta.....	Granite Canon, Wyoming
Williams, Jennie Winona.....	Ucross, Wyoming
Williams, Robert Hilliard.....	Breckenridge
Wilson, Alfred Lawrence.....	Delta
Wilson, Carroll Eldred.....	Milliken
Wilson, George Gruver.....	Montrose
Wilson, Lynn J.....	Greeley
Wilson, Minnie L.....	Boulder
Winegar, Frank W.....	Burlington
Wood, Inez	Boulder
Wood, Irene	Boulder
Work, Helen	Salida
Wright, Lillian Florence.....	Monte Vista
Writer, Deane Jasper.....	Denver
Zook, Marvel Mae.....	Erie

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SPECIAL STUDENTS

NAME	RESIDENCE
Anderson, Bertha Mary.....	Boulder
Ball, Musetta	Osceola, Nebraska
Brown, Jacob Josephus.....	Boulder
Clemens, William Jerome.....	Boulder
Cook, Bessie	Independence, Missouri
Cordes, Howard F.....	Cincinnati, Ohio
Cramer, Olin Lavar.....	Toledo, Ohio
De Motte, Oliver.....	Boulder
Drinkwater, Mary Ellen.....	Denver
Duce, Harold Taylor.....	Boulder
Foster, Thomas Scurr.....	Denver
Goldsmith, Amy Houchin, A.B.....	Gunnison
Hubly, Nellie	Battle Creek, Michigan
Jones, Leonard	Boulder
Klingler, Marion, A.B.....	Boulder
Lake, Estelle Daisy.....	Boulder
Lamar, Kate Elizabeth.....	Elmo, Missouri
Levine, Olga	Boulder
McNulty, Catherine Esther, A.B.....	Carbondale
Matthews, William Ralph, A.M.....	Louisville
Miller, Armon Dee.....	Valloroso
Mohr, Nell Shonerd.....	Hardin
Muir, Hattie E. Robinson.....	Boulder
Overmeyer, William George.....	Monroe, Washington
Polson, Dorothy	Hoquiam, Washington
Stewart, Nell Elizabeth, B.S.....	Pueblo
Tate, Clara Chilton.....	Denver
Thomas, Sarah Alston.....	Rembert, Alabama
Thweatt, Margaret	Boulder
Tinsley, Joseph E.....	Boulder
Wagner, William Albert.....	Boulder
Ware, Roy A.....	Boulder
Warner, Marietta	Denver
Williamson, Geraldine Ruth.....	Golden
Wilson, Sue, B.S. in Education.....	Denver

COLLEGE OF ENGINEERING

SENIOR CLASS

NAME		RESIDENCE
Anderson, Albert Severin.....	E.E.	Denver
Barr, Harold Alfred.....	C.E.	La Junta
Barrett, Willis Chapel.....	C.E.	Boulder
Belser, Carl	Ch.E.	Boulder
Brock, Jesse Raymond.....	E.E.	Kimberly, Idaho
Burghardt, King	C.E.	Denver
Campbell, Ernest Glenn.....	Ch.E.	Boulder
Canis, Frank Herald.....	C.E.	Longmont
Counts, Hilda	E.E.	Boulder
Dobbins, Eugene Victor.....	Ch.E.	Denver
Duggan, Harold Charles.....	M.E.	Denver
Elliott, John Paul.....	C.E.	Boulder
Eschenburg, Herman Marinus.....	C.E.	Boulder
Froese, Erhard Albert.....	Ch.E.	La Junta
Gillett, Clarence Herbert.....	Ch.E.	Denver
Gray, Wharton Kinsey.....	M.E.	Denver
Harmon, Earl Leonard.....	C.E.	Lafayette
Hedgecock, Wendall Thomas.....	C.E.	Denver
Hoffman, Roy August.....	E.E.	Denver
Holm, Alvin John.....	Ch.E.	Denver
Johnson, Lester Bryan.....	E.E.	Durango
Killian, George Leslie.....	E.E.	Denver
Kretschmar, George Gustav.....	E.E.	Lamar
Lawrence, Wylie Earl.....	Ch.E.	Boulder
Lee, William Russell.....	E.E.	Lamar
Lendecke, Hugo Robert.....	C.E.	Georgetown
Lindsay, James Armour.....	Ch.E.	Denver
Malixi, Juan	C.E.	Balango, Philippine Islands
Matthews, Thomas Ignatius.....	E.E.	Denver
Mellettt, Will Wood.....	Ch.E.	Boulder
Nock, Henry Thomas.....	Ch.E.	Denver
Nord, Arthur William.....	E.E.	Boulder
Oviatt, Edward William.....	C.E.	Loveland
Page, Henry Anthony.....	E.E.	Denver
Pratt, Stuart Wilkins.....	Ch.E.	Boulder
Sanders, Forest Wayne.....	Ch.E.	Durango
Skinker, Murray Fontaine.....	E.E.	Denver
Smith, Terryl Clarence.....	E.E.	Boulder
Vicklund, Claud Alven.....	M.E.	Denver
Vicklund, Enoch Rhinehart.....	M.E.	Denver
Woodworth, Dean Thorp.....	Ch.E.	Custer, South Dakota
Young, Benjamin Uel.....	E.E.	Evans

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JUNIOR CLASS

NAME		RESIDENCE
Alford, Reuel Stillman.....	E.E.	Castle Rock
Allen, Harold	C.E.	Cripple Creek
Baker, Gano Reeder.....	E.E.	Denver
Bartlett, Earl Alfred.....	C.E.	Denver
Blom, Max	E.E.	Boulder
Brickler, Alexander Jesse.....	M.E.	Denver
Brinkley, Bert	Ch.E.	Boulder

NAME		RESIDENCE
Burkhard, Myron Joseph.....	Ch.E.	Florence
Carpenter, Edwin Gilbert.....	C.E.	Mancos
Catterson, Frehn Hutchins.....	Ch.E.	Tucumcari, New Mexico
Caughey, Clarence Harold.....	M.E.	Boulder
Chandler, Harold William.....	M.E.	Denver
Clarke, Thomas Howard.....	E.E.	Eureka
Coulson, Donald Chaney.....	Ch.E.	Ignacio
Crispelle, Kenneth Guy.....	E.E.	Leadville
Eaves, Elsie.....	C.E.	Sterling
Elder, Andrew Darwin.....	Ch.E.	Denver
Foulk, Theodore Marlowe.....	E.E.	Denver
Franklin, Walter Byron.....	Ch.E.	Fort Collins
Grove, Arthur Edwin.....	Ch.E.	Grand Junction
Haffey, Patrick Joseph.....	Ch.E.	Denver
Hansen, Arnold Adolph.....	E.E.	Denver
Herman, Harry Henry.....	M.E.	Boulder
Hill, Ralph Marcus Douglas.....	M.E.	Albuquerque, New Mexico
Iverson, Conrad Marcellus.....	M.E.	Longmont
Jewett, John Quincy.....	C.E.	Denver
Johnson, Alan Hawley.....	E.E.	Denver
Jones, Edward Maurice.....	Ch.E.	Rockvale
Kelley, Francis Joseph.....	Ch.E.	Leadville
Kimsey, William Alexander.....	M.E.	Denver
Kretschmer, Charles, Jr.....	E.E.	Pueblo
Lalli, Anthony S.....	E.E.	Louisville
Lewis, Edwin Constant.....	E.E.	Boulder
Lind, Raymond William.....	C.E.	Boulder
McNerney, Townsend.....	Ch.E.	Denver
Mechling, Eugene Burlingame.....	E.E.	Denver
Melton, Lou Alta.....	C.E.	Boulder
Morehouse, Harry Clarence.....	M.E.	Denver
Morrison, Richard Sykes.....	C.E.	Denver
Moyer, Claude Henry.....	C.E.	Bethlehem, Pennsylvania
Murray, Lee James.....	E.E.	Denver
Phelps, Colin Eastwood.....	E.E.	Broomfield
Rice, Harold Frederick.....	E.E.	Ouray
Rixford, Charles Orville.....	M.E.	Denver
Sanders, Vernon Heber.....	Ch.E.	Durango
Scudder, Felix Ward.....	E.E.	Denver
Sellers, Jesse Earl.....	Ch.E.	Boulder
Stone, Caleb.....	C.E.	Denver
Stubbs, Frank Whitworth, Jr.....	C.E.	Delta
Sumner, George Ellsworth.....	E.E.	Greeley
Taylor, Robert Hugh.....	M.E.	Denver
Wolff, Hiram Bradley.....	Ch.E.	Denver

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SOPHOMORE CLASS

NAME		RESIDENCE
Alexander, Harold Everett.....	Ch.E.	Castle Rock
Anderson, Glenn Willard.....	M.E.	Denver
Andrews, Everett Philip.....	C.E.	Boulder
Babcock, Jasper Dwight.....	E.E.	MacGregor
Beresford, Kenneth Edwin.....	E.E.	Boulder
Blakeslee, Sherley E.....	Ch.E.	Riverton, Wyoming
Bongera, Bert Peter.....	C.E.	Trinidad
Brown, James Schuyler.....	C.E.	Denver
Buck, Arnold Friederich.....	M.E.	Denver
Buffington, Chalmer Dale.....	M.E.	Ness City, Kansas
Bunting, Joseph William.....	M.E.	Lafayette
Burk, Harold De Witt.....	Ch.E.	Sterling
Burke, Edward Raymond.....	Ch.E.	Denver
Card, Lawrence Baker.....	M.E.	Denver

NAME	RESIDENCE
Crowley, Corydon Henry.....	E.E. Boulder
Degering, Carl Adolph.....	E.E. Florence
Dickason, Gray David.....	Ch.E. Denver
Divine, Howard Eber.....	M.E. Palisade
Dougherty, Vivian Channing.....	M.E. Salida
Dunstone, Arnold Edward.....	E.E. Denver
Everingim, Charles Stanley.....	Ch.E. Denver
Fertig, Wendell Welby.....	Ch.E. La Junta
Field, John Thomas.....	Ch.E. Denver
Freeman, Tom Thompson.....	Ch.E. Denver
Harrington, Matthew Leo.....	Ch.E. Durango
Heacock, Lester Payson.....	C.E. Montrose
Hendrick, Roy Wesley.....	C.E. Boulder
Hovlid, Alvah Martin.....	Ch.E. Longmont
Inman, Brayton James.....	C.E. Muskogee, Oklahoma
Irion, James Robert.....	E.E. Denver
Jennings, Frank Albert.....	C.E. Pueblo
Johnson, Carl Harold.....	C.E. Boulder
Johnson, Jerome McKinley.....	M.E. Gunnison
Jones, Daniel Sherman.....	C.E. Center
Katzman, Samuel.....	Ch.E. Denver
Kelty, William Francis.....	E.E. Denver
Kerr, Clarence Leroy.....	E.E. Globe, Arizona
Knudson, Clarence Milton.....	C.E. Denver
Koernig, Raymond Chandler.....	M.E. Denver
Kohler, Frederick William, Jr.....	M.E. Boulder
Leach, Joe Robert.....	E.E. Boulder
Leigh, Haslett B.....	Ch.E. Burley, Idaho
Levine, Hyman.....	M.E. Boulder
Lillie, Charles William.....	E.E. Denver
McFarlane, Frank Lloyd.....	M.E. Denver
Major, William Dewey.....	M.E. Telluride
Merrill, Richard Lee.....	Ch.E. Lamar
Merritt, Howard Thomas.....	E.E. Denver
Meyer, Harry.....	C.E. Lafayette
Miller, Hyman Paul.....	C.E. Denver
Monesmith, Erle Richard.....	E.E. Trinidad
Moss, Kendall Frank.....	E.E. Denver
O'Kelly, Francis Cornelius.....	E.E. Telluride
Oliver, Chester Brownley.....	C.E. Boulder
Patterson, Ernest George.....	Ch.E. Fort Morgan
Phillips, Lawrence Emmert.....	Ch.E. Rockvale
Pinsky, Joseph.....	M.E. Denver
Porter, Russell Wolcott.....	E.E. Carthage, Missouri
Price, Julius F.....	M.E. Boulder
Reed, Edward Walker.....	M.E. Denver
Sappenfield, Franklin Oscar.....	C.E. Boulder
Schrepferman, Charles M.....	Ch.E. Denver
Seyler, Paul Kruger.....	E.E. Denver
Shapiro, Isadore Benjamin.....	Ch.E. Denver
Smith, Donald Evanston.....	C.E. Fowler
Smith, Dudley Hamner.....	C.E. Aspen
† Solomon, Morris Jacob.....	E.E. Boulder
Sommer, Armand.....	C.E. Denver
Stewart, Jackson Magnus.....	M.E. Loveland
Stiefel, Alfred Carl.....	C.E. Denver
Suess, Willard Frederick.....	E.E. Denver
Summers, William Glenn.....	Ch.E. Denver
Troutman, John Franklin.....	C.E. Pueblo
Vail, Kenyon Colyar.....	Ch.E. Denver
Vastine, Marvin William.....	M.E. Fowler
Wadley, Frederick Hinsdale.....	Ch.E. Denver

† Died October 11, 1918.

NAME		RESIDENCE
Wall, Harold Francis	E.E.	Denver
Wastfield, Walter Burns	E.E.	Denver
Weaver, Russell Lee	C.E.	Austin
Wigginton, Frank Clark	Ch.E.	Denver
Wylam, Clarence Chamberlain	M.E.	Boulder

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FRESHMAN CLASS

NAME		RESIDENCE
Abbott, Everitt David		Aspen
Acker, Sanford Irwin		Denver
Adams, Marvyn Smith		Denver
Alexander, Arthur Edwin		Castle Rock
Allan, Walter James		Denver
Allard, Ambrose C.		Evanston, Wyoming
Allen, Alexander J.		Glenwood Springs
Allen, Wilbur Crossan		Salida
Allison, John B.		McPherson, Kansas
Almgren, Earl William		Fairplay
Amidon, Albert Beneett		Pueblo
Andrews, Lloyd		Keota
Arnold, Leon Chester		Fort Lupton
Ashley, John Herbert		Ouray
Athey, Howard Williamson		Boulder
Bacon, Francis Gilbert		Boulder
Baerresen, Gilbert Harold		Denver
Bahret, Clarence Andrew		Denver
Bale, Milo De Witt		Scales Mound, Illinois
Barker, James Ellsworth		Boulder
Barnard, Karl K.		Johnstown
Barnes, Howard Trueman		Sterling
Bartlett, Milton Frank		Denver
Bartley, Launcelot Thomas		Pueblo
Bates, Walter Sylvester		Idaho Springs
Baughman, Milo R.		Goodland, Kansas
Beckett, Norman Poston		Lafayette
Beckham, Charles William		Guffey
Belcher, Lynn Long		Pueblo
Bell, John Lawrence		Montrose
Bentley, Fred Embree		Denver
Berglund, Ralph H.		Englewood
Berniker, David		Denver
Blade, Frank Joseph		Denver
Blair, Leo		Olathe
Blanchard, Paul		Boulder
Borland, Harold G.		Flagler
Bradley, Harold Aaron		Denver
Brainard, Boyd Bertrand		Denver
Breitenstein, Jean Sala		Boulder
Brewer, Frank Adolph		Manzanola
Brooks, Herbert G.		Cripple Creek
Brownson, Bruce P.		Grand Junction
Bullock, Philip Wesley		Merino
Burbank, Warner Van Vleck		Red Cliff
Burger, Charles Roland		Boulder
Byers, George Washington		Brighton
Cable, Vaughn Herold		Windsor
Cahn, Leonard Horace		Denver
Campbell, Joe Leslie		Florence
Campiglia, Eugene John		Denver

NAME	RESIDENCE
Carlson, Elmer John.....	Denver
Carlson, Paul H.....	Twin Falls, Idaho
Carnahan, Harry Harper.....	Trinidad
Carpenter, Marion Scott.....	Denver
Carper, Gerald Irving.....	Denver
Cassell, Wallace Lewis.....	Greybull, Wyoming
Chamberlin, Berton Elmer.....	Craig
Chamberlin, Chester Clifford.....	Denver
Chamberlin, L. Lloyd.....	Denver
Chamberlin, Mert Henry.....	Craig
Chapin, Leverett A.....	Boulder
Chase, John Earl.....	Denver
Chatfield, Ralph.....	Nucla
Clampitt, Audis B.....	Mancos
Clark, Albert Farnham.....	Mancos
Clark, Franklin Kenneth.....	Lascar
Cohig, James Fanning.....	Denver
Cole, Thomas David.....	Denver
Coleman, Dean Albert.....	Boulder
Conwell, Marion Keppler.....	Lamar
Coon, Robert Lyle.....	Denver
Cooper, Howard E.....	Canon City
Cordes, Richard Joseph.....	Denver
Crandall, Percy Clinton.....	Denver
Crane, George Darwin.....	Denver
Crane, Leland T.....	Denver
Crawford, Samuel C.....	Denver
Crews, Virgil Glenn.....	Denver
Crocker, Harris Leslie.....	Denver
Croghan, Dewey.....	Eaton
Crosier, Warren Dewey.....	Rocky Ford
Cross, Douglas Alvin.....	Glenwood Springs
Crow, Ralph L.....	Romeo
Crowner, Paul.....	Sterling
Cummins, Michael Louis.....	Durango
Custer, Brooks Orland.....	Boulder
Daniels, Frank Junior.....	Denver
Davidson, Walter M.....	Denver
Davies, Marvin John.....	Littleton
Denning, Jay Wayne.....	Denver
Devy, Walter J.....	Victor
Dice, Marion English.....	Lafayette
Dickey, Donald Edgar.....	Windsor
Dickson, Robert William.....	Denver
Dimm, Walter Leisenring.....	Denver
Dodd, John.....	Niwot
Donley, Richard Oliver.....	Morrison
Doolittle, Frederick Browne.....	Aspen
Doud, Arthur M.....	Silverton
Dowis, Dean Huston.....	Sterling
Downing, Lois Valentine.....	Lamar
Duffy, James Donald.....	Denver
Duncan, Solon Elmer.....	Salida
Dunleavy, Joseph Dewey.....	Denver
Dunn, Floyd Ellsworth.....	Cherokee, Iowa
Dunn, Hobart Reimer.....	Milliken
Eagleton, Emerson M.....	Ordway
Eaton, Glenn.....	Fairplay
Edison, Elmer Raynold.....	Lafayette
Elliot, Richard.....	Colorado Springs
Elwood, Rex B.....	Boulder
Emerson, Warren Nelson.....	Chicago, Illinois
Eppich, Karl Edward.....	Denver
Erickson, Murdin E.....	Fruita

NAME	RESIDENCE
Erickson, Orwar Hjalmar.....	Monte Vista
Fairbairn, Roy Thomas.....	Loveland
Farmer, Robert Ashbrook.....	Denver
Fauber, Joseph Charles.....	Montrose
Fenner, Zell G.....	Colfax, Iowa
Fisher, Carlos R.....	Denver
Flint, Jean C.....	Boulder
Flower, Gordon Benedict.....	Denver
Flynn, John.....	Wolcott
Foerester, William Kappes.....	Ouray
Ford, Perry Miers.....	Proctor
Frame, William Melvin.....	Sterling
Freeman, Bassett Barnard.....	Loveland
Freeman, William Lansingh.....	Briggsdale
Fuller, Harry Clark.....	Eagle
Funk, Herman, Jr.....	Fort Lupton
Gardner, Chester Lewy.....	Hugo
Gedney, Oswald Lawrence.....	Denver
Gerety, Henry.....	Pueblo
Gildea, John.....	Leadville
Goessling, Frederick George.....	Denver
Goodheart, Donald Everett.....	Denver
Goodner, James Russell.....	Rocky Ford
Graeber, Rowland Webster.....	Denver
Graham, Robert A.....	Monte Vista
Griffith, Paul Ellis.....	Milliken
Gross, Alonzo Clarence.....	Trinidad
Gross, Leo Henry.....	Denver
Gross, Samuel.....	Denver
Hahn, Paul.....	Denver
Hahnwald, August Paul.....	Denver
Hailey, Merritt.....	Montrose
Hall, James Lester.....	Moffat
Hamilton, Dean Clarence.....	Palisade
Harms, Henry Bennett.....	Loveland
Harry, John.....	Canon City
Hasty, Clarence W.....	Scholl
Head, John Solon.....	Paonia
Hebel, Ivan Lee.....	Denver
Hemingway, Dwight.....	Erie
Henney, Fred.....	Olathe
Herzberger, Cecil Leo.....	Fowler
Heydrick, Harold F.....	Muskogee, Oklahoma
Hoffman, George.....	Denver
Hoffmeister, Harold Arthur.....	Boulder
Holland, Josiah Gilbert.....	Denver
Holman, Edward Augustus.....	Boulder
Hopfinger, Louis J.....	Leadville
Hopkin, Robert Douglas.....	Denver
Hopkins, Howard.....	Denver
Hopper, Cecil John.....	Granada
Hotz, Alvin Joseph.....	Sterling
House, Cadwell Burl.....	Boulder
House, Cecil Pennington.....	Boulder
Houston, Dallas James.....	Canon City
Inman, Merrill.....	Julesburg
Jack, Stirling John.....	Denver
Jacobson, Iver Norman.....	Boulder
Jamieson, William Gillette.....	Trinidad
Jasper, Frank James.....	Denver
Jenkins, John Caden.....	Delta, Utah
Johnson, Ebert Taylor.....	Boulder
Johnson, Leonard Earl.....	Leadville
Johnson, Winfred Harry.....	Niwot

NAME	RESIDENCE
Johnston, Roderick Elmer.....	Denver
Jones, Alva Thomas.....	Genoa
Joyce, William Gerald.....	Durango
Juett, Paul	Denver
Julen, Edward Henry.....	Leadville
Karsh, Max Joseph.....	Denver
Keel, Howell Clifford.....	Arlington
Keeler, Harry Francis.....	Longmont
Keeler, Raymond Carlyle.....	Denver
Kellar, Herbert Austin.....	Boulder
Kellogg, Richard Aaron.....	Boulder
Kiefer, Clarence Vincent.....	Fruita
King, Hugh Larimore.....	Denver
King, William Harriss.....	Denver
Koenig, Ralph Albert.....	Loveland
Laughlin, Bert	Trinidad
Lavelle, Jack Richard.....	Denver
Lawrence, Van Buren.....	Boulder
Leach, John Russell.....	Boulder
Leathers, David Allison.....	Grover
Leech, Lawrence	Brush
Le Fevre, Harry Wilson, Jr.....	Denver
Lehman, Lyle G.....	Denver
Lenger, Leonard Lafayette.....	Brush
Lenning, George	Brush
Lester, Oliver C., Jr.....	Boulder
Lewis, Perley Mitchell.....	La Junta
Linsenmaier, William Richard.....	Denver
Little, William Selman.....	Sterling
Lloyd, Forrester	Denver
Longenberger, Lamar	Hazeltine, Idaho
Lord, William Edward.....	Denver
Lovejoy, Edwin	Rocky Ford
Lovelady, Adelbert Ashenhurst.....	Fort Lupton
Lowes, Gilbert Eaton.....	Sedgwick
Lyster, Cyril E.....	Greeley
McDaniel, Paul Grace.....	Gallup, New Mexico
McDaniel, Ralph Lawrence.....	Pueblo
McLean, Donald H.....	Lamar
McNeal, Donald Hamlin.....	Denver
McRoberts, Edwin W.....	Hot Springs, South Dakota
MacDonald, Lean D.....	Boulder
Mathews, Avery Lester.....	Denver
Mayer, Sidney Leon.....	Denver
Mellet, John	Boulder
Meyer, Alva Henry.....	Denver
Mills, Neil	Ignacio
Milner, Carlisle K.....	Arvada
Miner, Earl James.....	Denver
Mitchell, John Harold Gordon.....	Denver
Monroe, Arthur Worley.....	Montrose
Montague, Horace Theodore.....	Denver
Montgomery, J. Ferguson.....	Denver
Morgan, Harry Atlee.....	Boulder
Morsch, Chester E.....	Denver
Morsch, Harold Joseph.....	Denver
Moses, Seymour	Denver
Mundy, Carl Lawrence.....	Denver
Muth, Robert Joseph.....	Denver
Neil, Paul Lester.....	Canon City
Nelson, Elmer	Denver
Nelson, Robert Carl.....	Leadville
Nelson, Wallis	Delta
Nix, Whitfield	Florence

NAME	RESIDENCE
Nordquist, Donald O.....	Victor
Norton, L. Sherman.....	Aurora
Nossaman, Robert J.....	Pagosa Springs
O'Brien, Roy Elsmere.....	Dawson, New Mexico
Olson, Arvid John.....	Denver
O'Neill, James Francis.....	Leadville
Owen, Robert Hancock.....	Denver
Owens, William H.....	Golden
Paland, Louis Raymond.....	Denver
Palmer, Harlan.....	Denver
Palmer, Homer Dewey.....	Boulder
Parsons, George S., Jr.....	Denver
Parsons, W. James.....	Boulder
Patton, Marshall Davis.....	Boulder
Pearse, Sherman.....	Denver
Pelta, Charles Paul.....	Cripple Creek
Pickel, Lewis Marion.....	Boulder
Plettner, Gerald H.....	Denver
Pneuman, Fred A.....	Denver
Pollock, J. Walter.....	Denver
Porter, Glenn Arthur.....	Longmont
Pringle, Herman.....	Denver
Randall, Charles Volney.....	Loveland
Randall, William Austin.....	Boulder
Read, Chester.....	Sterling
Reade, Arthur Cale.....	Denver
Rechnitz, Morton.....	Denver
Reed, Enoch Harvey.....	Wray
Rettenmeyer, Francis Xavier.....	De Beque
Rice, Arthur Clair.....	Hugo
Riley, Lyle Valentine.....	Fowler
Robb, Pearl L.....	Flagler
Robertson, Lawrence Marshall.....	Denver
Robertson, Oscar Lofton.....	Denver
Rouner, Thomas Jefferson.....	Genoa
Rowley, Walter Francis.....	Tungsten
Russell, Denzell V.....	Danville, Iowa
Safe, Arthur Emil.....	Aspen
Sanford, Wyman.....	Grand Junction
Schalk, Robert Louis.....	Rawlins, Wyoming
Schnadmill, Maxmillian Mike.....	Denver
Secrest, Raymond Thompson.....	Arvada
Shapiro, Charles Harry.....	Denver
Shimeall, Robert C.....	Goodland, Kansas
Smith, Earl G.....	Denver
Smith, Frank Reid.....	Denver
Speas, Samuel Francis, Jr.....	Buena Vista
Springer, Frank Raymond.....	Brush
Staats, H. Byron.....	Denver
Stakebake, Ernest Lloyd.....	Colona
Stark, Francis Middleton.....	La Junta
Stark, Harry Ellis.....	Ouray
Starks, Charles Robert.....	Denver
St. Clair, James Alexander, Jr.....	Longmont
Stein, Jacob John.....	Denver
Stewart, Edgar Eugene.....	Denver
Stodghill, Paul.....	Denver
Strain, Robert Littel.....	Lamar
Stubbs, Paul.....	Saguache
Sutley, Byron.....	Center
Sylvester, Thomas Donnell.....	Albuquerque, New Mexico
Taylor, Robert Warren.....	Denver
Temple, Clyde Verne.....	Elkton
Thomas, John Henry.....	Olathe

NAME	RESIDENCE
Tilden, George Frederick.....	Oberlin, Kansas
Toohar, James Leslie.....	Pueblo
Trinnier, C. Marvin.....	Denver
Turner, Horace Parkes.....	Louisville
Van Nostrand, G. Clark.....	Monte Vista
Vickery, Albion K., Jr.....	Denver
Vidal, Emile Numa.....	Denver
Vidal, Henri Brownell.....	Denver
Walker, Lawrence.....	Pueblo
Wallace, Arthur Wycoff.....	Boulder
Wallace, John James.....	Ladoga, Indiana
Walsh, Tim Everett.....	Canon City
Walz, Frank Christian.....	Pueblo
Ware, Charles Myron.....	Salt Lake City, Utah
Wassaw, Wilbur Frederick.....	Cripple Creek
Weiss, Adolph.....	Denver
†Wharton, Robert Franklin.....	Meeker
Whiteaker, George.....	Simla
Whitehead, George.....	Denver
Whiteside, Wallace.....	Fort Lupton
Willard, James Lee.....	Denver
Williams, Edward H.....	Canon City
Williams, Ronald Arthur.....	Denver
Williams, O. Sherwood.....	Greeley
Williams, Verne Homer.....	Golden
Willoughby, Orville Phillip.....	Denver
Wilson, Ross William.....	Canon City
Wilson, Teller C.....	Denver
Wiseman, Max Louis.....	Denver
Withers, Jack Newton.....	Dolores
Woods, Howard Robert.....	Lamar
Woodward, Russell Edgar.....	Snyder
Young, Dwight S., Jr.....	Denver
Young, Walter Seymour.....	Holyoke
Zanella, Henry Bert.....	Ouray
Zingg, Robert Mowry.....	Holyoke
Zinn, Harry Arl.....	Denver

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SPECIAL STUDENTS -

NAME	RESIDENCE
Ball, James Ogden.....	Crested Butte
Coates, Alfred Melbourne.....	Fort Dodge, Iowa
DuBois, William Culbertson.....	Boulder
Erb, Francis Dean.....	East Lynn, Massachusetts
Stiles, Frank Luther.....	Loveland
Tamminga, John Simon.....	Denver

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† Died October 11, 1918.

COLLEGE OF PHARMACY

SECOND YEAR CLASS

NAME	RESIDENCE
Armstrong, Elma Lavenia.....	Grand Junction
Burgess, Charlotte Hollingsworth.....	Boulder
Jaquiss, Hazel Dell.....	Paonia
Lloyd, Kenneth Watson.....	Boulder
Myers, Helen May.....	Monte Vista
O'Brien, Faye Frances.....	Dawson, New Mexico
Stauffer, Walter Brown.....	Rifle
Swisher, Margaret Catherine.....	Hotchkiss
Weyand, Esther Lucile.....	Glenwood Springs
Wood, Armilda Jane.....	Boulder

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FIRST YEAR CLASS

NAME	RESIDENCE
Bacon, Estel Elaine.....	Rocky Ford
Bishop, Esther Elmina.....	Golden
Brennan, George Edwin.....	Erie
Burns, Jeannette Lucille.....	Littleton
Caywood, Rodney James.....	Nederland
Field, Ruth Eugenie.....	Boulder
Fye, Leda.....	Boulder
Hemingway, Dwight.....	Erie
Killebrew, Clair William.....	Fort Morgan
Lovejoy, Elijah Parish.....	Rocky Ford
Myers, Helen Georgia.....	Alamosa
Simpson, Helen.....	Fowler
Stark, Roene Opal.....	Boulder
Taylor, Percy Edward.....	Montrose

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SPECIAL STUDENTS

NAME	RESIDENCE
Burgman, Emily Mae.....	Ignacio
Croke, Aloysius Edward.....	Durango
Ryden, Frederick William.....	Creede

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TRAINING SCHOOL FOR NURSES

THIRD YEAR CLASS

NAME	RESIDENCE
Abbett, Nellie Blanch.....	Brighton
Carter, Mary Susan.....	Caffy, Missouri
Detweiler, Hallie Mae.....	Limon
Heckman, Anna	Grand Junction
Hopfinger, Eva Bertha.....	Leadville
McAnlis, Florence Guthrie.....	Boulder
Richburg, Lilla	Windsboro, Texas
Williams, Alna	Cripple Creek

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SECOND YEAR CLASS

NAME	RESIDENCE
Barnsley, Geneva	Longmont
Colestock, Trilby Ruth.....	Hecla, South Dakota
Cowgill, Josephine	Boulder
Dickey, Gladys	Windsor
Dodson, Frances Willard.....	Durango
Grill, Helen	Boulder
Jacobson, Gerda Marie.....	Fowler
Lightfoot, Grace	Cripple Creek
Rohwer, Hester Marian.....	Boulder

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FIRST YEAR CLASS

NAME	RESIDENCE
Allison, Orpah	Paonia
Ford, Ethel	Leonardville, Kansas
Houghton, Ruth Vivian.....	Kackley, Kansas
Hurley, Carrie	Cass City, Michigan
Johnson, Bertha A. W.....	York, Nebraska
Pla, Maria Amparo.....	Fajardo, Porto Rico
Stanton, Helen	Boulder

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SUMMER CLASS, 1918*

NAME	RESIDENCE
Bohn, Margaret May.....	Longmont
Colestock, Trilby Ruth.....	Hecla, South Dakota
Cowgill, Josephine	Boulder
Dickey, Gladys	Windsor
Gardner, Beatrice	Gering, Nebraska
Grill, Helen Pauline.....	Boulder
Lakenan, Mary Emily McCue.....	Boulder
Lightfoot, Grace	Cripple Creek
Red, Mary Bowers.....	Mexia, Texas
Rewalt, Alice Davidson.....	Ouray
Shaw, Harriet Bliss.....	Cripple Creek
Skiff, Marjorie	Boulder
Wolf, Ruth Bellman.....	Boulder

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* To meet the need for nurses arising from the war this special class was arranged for students with two years of college work. The course is to be completed in twenty-seven months.

SUMMER SESSION STUDENTS, 1918

NAME	RESIDENCE
Abbott, Sabra Jane, Ph.B.....	Wood River, Nebraska
Abrahamson, Mary	Boulder
Ackerman, Lloyd, Pd.M., A.B.....	Boulder
Adams, Anna Grace, B.M., A.B.....	Arkadelphia, Arkansas
Adams, Ella, A.B.....	Arkadelphia, Arkansas
Adams, Jennie Mae.....	Norton, Kansas
Adams, Victor Kirk.....	Boulder
Adamson, Ida Kate.....	Altus, Oklahoma
Alexander, Truda	Guymon, Oklahoma
Alford, Reuel Stillman.....	Boulder
Allbaugh, Edgar B.....	Clay Center, Kansas
Allen, Gertrude	Kansas City, Missouri
Allen, May	Pueblo
Anderson, Eugene Newton.....	Boulder
Andrews, Hazel Irene, A.B.....	Boulder
Andrews, Lora Lee, B.L.....	Cameron, Texas
Andrews, Mary E.....	Boulder
Arnold, Lucy, A.B.....	Texarkana, Arkansas
Arozena, Rosa T.....	San Angelo, Texas
Ashley, May Prince.....	West Helena, Arkansas
Atkinson, Ada Irwin, A.M.....	Omaha, Nebraska
Axline, Laura A.....	Pratt, Kansas
Bacon, Dorothy Louise.....	Boulder
Bailey, Cora Murray.....	Foreman, Arkansas
Baird, Estelle, B.S.....	Plattsmouth, Nebraska
Baker, Hazel	Pine Bluff, Arkansas
Ball, Katherine Alice, Pd.B.....	Golden
Barber, Blanche A.....	Sturgis, South Dakota
Barker, Grace.....	Kansas City, Missouri
Barnes, Gladys A., A.B.....	Coyle, Oklahoma
Barnes, Minerva	Coyle, Oklahoma
Barnett, Louis Phillip.....	Columbia, Missouri
Barneveld, Frances van.....	Tucson, Arizona
Barr, Eva Louise, A.M.....	Monmouth, Illinois
Bassett, Bonnie	Kemp, Texas
Bay, Maurine.....	Ritchfield, Kansas
Becker, Eugenia, L.I.....	Kaufman, Texas
Bell, Lillian, A.B.....	Girard, Kansas
Belser, Mary Ernestine.....	Boulder
Benedict, Flora, A.M.....	Marietta, Ohio
Bennett, Rexie Ellen, A.M.....	Boulder
Benson, Lillian Elvira.....	Boulder
Benton, Ethel	Pampa, Texas
Berg, Selmer, A.B.....	Gruver, Iowa
Berry, Georgia Stephens, A.B.....	Vinita, Oklahoma
Berryman, Lena Mabel, B.S. in Ed.....	Fredericktown, Missouri
Birdick, Arthur Almon.....	Merino
Birkenhauer, Louise.....	Kansas City, Missouri
Blumer, Nena Elizabeth.....	Elizabeth
Black, Grace Ramsay.....	Boulder
Board, Mary Dawkins.....	Kansas City, Missouri
Bockius, Doris von Eisen, B.S.....	Chicago, Illinois
Bodmer, Henriette.....	Grand Island Nebraska
Bodmer, Selma	Grand Island, Nebraska
Bolles, Esther Janet.....	Denver
Borton, Ethel E.....	Golden, Illinois

NAME	RESIDENCE
Boutwell, Ethel.....	Meridian, Texas
Boutwell, Franklin A., Jr., A.B.....	Meridian, Texas
Bowler, Mary Angela.....	Denver
Boyack, Beatrice.....	Oklahoma City, Oklahoma
Boyd, Katherine.....	Oakland, Nebraska
Boyd, Laura Alice, A.M.....	Sterling, Kansas
Branham, Sara Elizabeth.....	Atlanta, Georgia
Briggs, Arland Ray, A.B.....	Boulder
Broadfoot, E. Virginia, A.B.....	Honey Grove, Texas
Brookes, Katharine, A.B.....	St. Louis, Missouri
Broome, Eunice.....	Fort Smith, Arkansas
Brown, Aline.....	St. Joseph, Missouri
Brown, Bessie Lee, Pd.B.....	Blue Springs, Missouri
Brown, Esther.....	Lecompte, Louisiana
Brown, Florence Ethel.....	Summitville, Iowa
Brown, Mae.....	Lecompte, Louisiana
Brown, Olive Rosamond.....	Louisville
Brown, Virginia.....	Augusta, Kansas
Bryant, Blanche E.....	Edmond, Oklahoma
Buller, Jacob P., A.M.....	Henderson, Nebraska
Burchard, Anna Letitia.....	Kansas City, Missouri
Burk, Georgina Meyer.....	Allentown, New Jersey
Burke, Margaret Katherine, A.B.....	Boulder
Burke, Ruth Genevieve, A.B.....	Boulder
Burr, Daisy Kelley, A.B.....	Boulder
Bushyhead, Fay.....	Claremore, Oklahoma
Bushyhead, Oowala.....	Claremore, Oklahoma
Caillet, Henry Louis.....	Johnstown
Campbell, Lillian May.....	Ft. Worth, Texas
Campbell, Myrtie T., A.B.....	Denver
Canfield, Ruth Mae, A.B.....	Holton, Kansas
Carr, Clara Maud, B.S.....	Kinsley, Kansas
Carvin, Lucy M., A.B.....	Wilmington, Delaware
Case, Lula.....	Almena, Kansas
Casey, Robert.....	Boulder
Casper, Adelaide.....	Independence, Missouri
Caufield, Kathleen.....	Boulder
Cazort, Ruth, L.I.....	Lamar, Arkansas
Centers, Neta.....	Neosho, Missouri
Chamberlin, Gertrude.....	Gridley, Kansas
Chao, Yuan Chen.....	Golden
Chenault, Helen Virginia.....	Boulder
Childers, Crete.....	Boulder
Clark, Christine Natalie.....	Neosho, Missouri
Clark, Lillian.....	Holton, Kansas
Clark, Mary.....	Anthony, Kansas
Clayton, Bennie Dell, A.B.....	Conway, Arkansas
Clayton, Bonnie Dale, A.B.....	Conway, Arkansas
Clayton, Louise.....	Conway, Arkansas
Cleveland, Jeane Beryl, A.B.....	Boulder
Cockerill, Cecil, A.M.....	Boonville, Missouri
Coe, Florence.....	Boulder
Coleman, Clara E.....	St. Louis, Missouri
Connely, Corinne, B.Pd.....	Harrisonville, Missouri
Conner, Erme.....	Canyon, Texas
Cook, Bula Zella.....	Fontanelle, Nebraska
Cook, Ida Belle.....	Pittsburgh, Pennsylvania
Cook, Mary Frances, B.L.....	Marianna, Arkansas
Cooper, Jennie Alwilda, A.B.....	Helena, Montana
Copps, Phebe Stoddard.....	Boulder
Cotten, Mittie, A.M.....	Tecumseh, Oklahoma
Coughlin, Albert Neville.....	Columbia, Missouri
Cowgill, Marthana M., A.B.....	Boulder
Crabtree, Dixie C.....	Lawton, Oklahoma

NAME	RESIDENCE
Craig, Anne K. N.....	Brownsville, Texas
Craig, Elberta Louise.....	Boulder
Craven, Verral J., B.S.....	Erie, Kansas
Cressman, Ada Beatrice, A.M.....	Lawrence, Kansas
Crihfield, Mabel.....	Geneseo, Kansas
Crowe, Marie, Ph.B.....	Chicago, Illinois
Cruzan, Evelyn, A.B.....	Bethany, Missouri
Culp, Margaret.....	Alton, Missouri
Cunningham, Alice L.....	Denver
Curtin, Faye.....	Boulder
Curtis, Sallie Richard.....	Beaumont, Texas
Cusic, May.....	Boulder
Dailey, Florence.....	Temple, Texas
Dallas, M. Boutwell.....	Celeste, Texas
Daniels, Gertrude.....	Trenton, Missouri
Dannemann, Anna Katherine.....	Amber, Iowa
Darrah, Bess Lillian.....	McPherson, Kansas
Daum, Eva, A.B.....	Nortonville, Kansas
Davenport, Cora, A.B.....	McPherson, Kansas
Davis, Elizabeth.....	Fulton, Kentucky
Davis, Flora Etta.....	Sedalia, Missouri
Davis, Mary A.....	Claremore, Oklahoma
Davison, Mary Louise.....	Gilliam, Missouri
Dawley, William H., Jr., A.B.....	Kansas City, Missouri
Day, Alice Ellen, A.B.....	Lincoln, Nebraska
Day, Ellen Fisher, A.B.....	Trenton, Missouri
Deardorff, Elnora.....	Geneseo, Kansas
Deck, Jo.....	Boulder
Deens, Anna M.....	Pittsburgh, Pennsylvania
DeLamar, Sudie, A.B.....	Bonham, Texas
Delhomme, Rowena A.....	Plaquemine, Louisiana
Denbo, Edna.....	Great Bend, Kansas
Denham, Leenel Genevieve.....	Boulder
Denton, Fern B.....	Evanston, Illinois
Deyo, Mildred.....	Augusta, Kansas
Dickens, May H.....	Brownsville, Texas
Dittemore, Bertha Lenora.....	Troy, Kansas
Doane, George Herbert.....	Cheyenne, Wyoming
Dobbin, Anna Mercy.....	Cheyenne, Wyoming
Dodson, Helen.....	Rock Island, Illinois
Dodson, Irene.....	Rock Island, Illinois
Donnell, Mabel M.....	Roby, Texas
Douden, Fannie Victor, A.B.....	Boulder
Douglas, Martha M., A.B.....	Oberlin, Kansas
Douglas, Mavis.....	Lancaster, Texas
Dow, Chandler Davida.....	Salina, Kansas
Downing, Grace.....	Tulsa, Oklahoma
Downing, Myrtle Ethel, B.S.....	Thayer, Kansas
Dresser, Minnie.....	Kansas City, Missouri
Duckworth, Guilford Marvin.....	Culro, Texas
Duffy, Catherine V.....	St. Paul, Minnesota
Duggan, Harold Charles.....	Denver
Dunbar, Eva.....	Jennings, Kansas
Dungan, Henrietta B. Grubb, Pd.B.....	Boulder
Dunham, Frances Aileen, A.B.....	Lincoln, Nebraska
Earle, M. Lovina.....	Tescott, Kansas
Eastman, Leslie Klepper.....	Boulder
Eaton, Frances A.....	Franklin, Nebraska
Eaton, Phyllis.....	Boulder
Echels, Lucy M.....	Beaumont, Texas
Eckel, Ruth Elizabeth, A.B.....	Boulder
Edwardes, Leota C.....	Springfield, Massachusetts
Elder, Andrew Darwin.....	Denver
Elliott, Ora, A.B.....	Wray

NAME	RESIDENCE
Ellis, Mina.....	Meridian, Texas
Englund, Sigrid, B.S.....	Falun, Kansas
Epler, Nora Elizabeth.....	El Centro, California
Ester, Elsie M., B.S.....	Peck, Kansas
Evans, Carrie Katura.....	Pittsburgh, Pennsylvania
Evans, Laurine.....	Norton, Kansas
Fallon, Fern A.....	DuQuoin, Illinois
Faris, Louis Belle, B.L.....	Marshall, Missouri
Farley, Mary, A.B.....	Hutto, Texas
Farris, Pearl Elizabeth.....	Littlefield, Texas
Farris, Verda Margaret, B.S.....	Big Spring, Texas
Faus, Robert Bert.....	Boulder
Fausold, Ada.....	Pittsburgh, Pennsylvania
Fauth, Irene Mae.....	Aurora, Illinois
Fauth, Marie.....	Aurora, Illinois
Featherstone, Ethel Taylor, Ph.B.....	Red Wing, Minnesota
Felling, Mary E.....	St. Joseph, Missouri
Ferguson, Alex McFarlane.....	Stranraer, Saskatchewan, Canada
Figley, Angeline, A.B.....	Hutchinson, Kansas
Finnup, Irene, A.B.....	Garden, City, Kansas
Fitzsimons, Fern, A.B. in Ed.....	Fort Dodge, Iowa
Fitzsimons, Ruth, A.B. in Ed.....	Fort Dodge, Iowa
Fleming, Edna Lorena.....	Soldier, Kansas
Flower, Harry J.....	Boulder
Fogg, Clara B.....	West Liberty, Iowa
Foster, Embree Hiller.....	Boulder
Foster, Katherina.....	Winfield, Kansas
Foster, Nelle, A.B.....	Olathe, Kansas
Fowler, Cora Ellen.....	El Dorado Springs, Missouri
Freeland, Haynes J., B.S., M.D.....	Denver
Freeman, Lelia S.....	Gonzales, Texas
Fremgen, Minnie.....	Karval
Fry, Dwight Iliff.....	Denver
Fugitt, Gertrude, B.Pd.....	Kansas City, Missouri
Fuller, Temperence.....	Geneseo, Kansas
Funk, Annice Perring.....	Green Ridge, Missouri
Furgason, Earle R., A.B.....	Garnett, Kansas
Gabriel, Alma, A.B.....	Boulder
Gabriel, Ruth.....	Des Moines, Iowa
Garvin, Helen.....	Boulder
Gaskill, Sarah, A.B.....	Houston, Texas
Geiselman, Mary Frances.....	Wooster, Ohio
Gephart, Mildred, A.B.....	Valley Falls, Kansas
Gibson, Ruth, A.B.....	Jonesboro, Arkansas
Gill, Florence Montgomery, A.B.....	Boulder
Gillam, Grace M.....	Chicago, Illinois
Gilleland, Joyce.....	Tulia, Texas
Gillett, Clarence Herbert.....	Denver
Goodman, Nellie Ruth, A.B.....	Greenfield, Iowa
Goodrich, Blanche.....	Nelson, Nebraska
Gordon, Ethel, Pd.B.....	Lamar
Goss, Lawrence Elmer, A.B.....	Olathe
Gray, Esther Elizabeth.....	Fowler, Kansas
Gray, Wharton Kinsey.....	Denver
Green, Dorothy May.....	Sterling
Green, Myers Alice.....	Onaga, Kansas
Greers, Esther.....	Marion, Kansas
Gregg, Mildred Lucile.....	Boulder
Greife, Lottie L.....	Windsor, Missouri
Gridley, Bonnie.....	Oakley, Kansas
Gridley, Eunice.....	Oakley, Kansas
Griffin, Beatrice.....	Buffalo Gap, South Dakota
Griffin, Mary E.....	Kansas City, Missouri
Grimes, Jewell.....	Huntsville, Missouri

NAME	RESIDENCE
Groom, Emma, A.B.	Boulder
Guyton, Billy Sylvester, A.M., M.D.	University, Mississippi
Hadley, Faye Lenna.	Wichita, Kansas
Hadley, Ione Anna.	Wichita, Kansas
Halliburton, Louise, A.B.; B.S. in Ed.	Carthage, Missouri
Hamilton, Robert Fox.	Denver
Hampton, Helen R.	Omaha, Nebraska
Haney, Hazel.	Pittsburgh, Pennsylvania
Hansen, Norma, Pd.B.	Denver
Hardin, Corinne.	Tecumseh, Oklahoma
Hardin, Jackie.	Tecumseh, Oklahoma
Harger, Chalmer Middleton.	Boulder
Harrelson, Sara, B.L.	Belton, Missouri
Harriman, Kate.	Kansas City, Missouri
Harrison, Alfred William.	Beaumont, Texas
Harrison, Izola.	Rosedale, Oklahoma
Harrison, Leila	Denver
Harrison, Mary Rose.	Plainview, Texas
Harrison, May Moulton.	Greenville, Texas
Harter, Nellie June.	St. John, Kansas
Harvey, Edward Lee.	Denver
Hatch, Ruth Irene, A.B.	Seneca, Kansas
Haverly, Cordula.	Omaha, Nebraska
Healey, Nan.	Omaha, Nebraska
Healey, Rose.	Omaha, Nebraska
Hendricks, Irene	Montrose
Hines, Katherine.	Kansas City, Missouri
Hinton, Elizabeth W., Pd.B.	Grand Junction
Hoffman, Julia, A.B.	Salina, Kansas
Holman, Mary Leska.	Mt. Pleasant, Texas
Hooke, Grace.	Kansas City, Missouri
Hough, Gladys, A.B.	Englewood
Hough, Ruby	Englewood
Howard, Helen Hunt.	Rifle
Hubbard, Fern.	Hutchinson, Kansas
Hubbard, Helen E.	Boulder
Hubbard, Katherine Crawford.	Boulder
Hubbard, Mae E., A.B.	Boulder
Hubbard, Marguerite	Boulder
Hubbell, Pay	Boulder
Hudson, Harriet Viola.	Fredonia, Kansas
Huff, Hazel.	Norton, Kansas
Hughes, Agnes, A.A.	Meridian, Texas
Hughes, Margery.	Shreveport, Louisiana
Hughes, Louise.	Meridian, Texas
Hunt, Ada, A.B.	Bethany, Nebraska
Hunt, Cora Florence.	Pittsburgh, Pennsylvania
Hunter, Grace Kirkendall.	Boulder
Huston, Hazel.	Windsor, Missouri
Hutchison, Bertie Logan, Pd.B.	Carrollton, Missouri
Hyde, Laura Hutchison, A.M.	Indianapolis, Indiana
Iles, Nellie, Pd.B.	Laramie, Wyoming
Ingham, Harriet.	Oklahoma City, Oklahoma
Inglis, Clara Grover, A.B.	Boulder
Inglis, Louise Baumberger.	Jacksonville, Illinois
Ingraham, Sydney Eleanor.	Boulder
Jackson, E. Barbee.	Sweet Springs, Missouri
Jackson, Julia A.	Tulsa, Oklahoma
Jarrell, A. J., Jr.	Temple, Texas
Jarrett, Elizabeth McCall.	Stratford, Texas
Jenkins, Alfreda.	Houston, Texas
Jenkins, Gertrude.	Kaw, Oklahoma
Jernigin, Zona Carr.	Commerce, Texas
Johnson, Anne Elvira, A.B.	Berthoud

NAME	RESIDENCE
Johnson, Elsa	Boulder
Johnson, Ethel Mary	San Benito, Texas
Johnson, Fannie Jane	Tulsa, Oklahoma
Jones, Era Mae	Bruceville, Texas
Jones, Hazel Harter	Colorado Springs
Jones, Mabel Gwendolyn	Erie
Joyce, Jennie Elma	Central City, Nebraska
Joyce, Ruth A.	Central City, Nebraska
Kauhl, Julia	Mexia, Texas
Keim, Marie	Denver
Keith, Viola	Montrose, Iowa
Kelley, Mary Margaret	Rosedale, Kansas
Kellum, Bessie I.	St. Francis, Kansas
Kelsall, Charles A.	Boulder
Kelsall, Helen	Boulder
Kelsey, Emma K.	White City, Kansas
Kemper, Delaware	Franklin, Louisiana
Kemper, Maude Wiley	Franklin, Louisiana
Kesner, Edgar, Ph.B.	Salida
Kiernan, Nora, A.M.	Huntsville, Missouri
Kinnison, Inez	Fort Collins
Klemme, Virginia, A.B.	Charles City, Iowa
Knight, Adda	Winfield, Kansas
Krause, Stella M.	Geneo, Nebraska
Kropf, Eldina, A.B.	Kirksville, Missouri
Krueger, Nellie E., Pd.B.	Cape Girardeau, Missouri
Kunz, Herman W., A.M.	Milwaukee, Wisconsin
Lachmann, Dora	Wever, Iowa
Lafferty, Mary Pearl	Ellsworth, Kansas
Langley, Edna J.	Kansas City, Missouri
Langley, Luverne Gove	Denver
Langworthy, Florence Elmina	Pittsburgh, Pennsylvania
Latta, Isabelle Sara, A.B.	Hammond, Indiana
Lee, William Russell	Lamar
LeVeque, Norma Eboile, A.B.	Boulder
Lewis, Donna May, A.B.	Grand Junction
Lewis, Mabel, A.B.	Whiting, Kansas
Lewis, William Ray, A.M.	Boulder
L'Heureux, Pearl Astella, A.B.	Nickerson, Kansas
Lightfoot, Grace	Cripple Creek
Liles, Lillian	Union, Montana
Lillard, Kathryn	Temple, Texas
Linscheid, Adolph, B.S.	Durant, Oklahoma
Lipscomb, Pauline	Little Rock, Arkansas
Lipscomb, Vanda	Little Rock, Arkansas
Liston, Sallie C.	El Dorado Springs, Missouri
Long, Ida Juanita	St. John, Kansas
Love, Walter S.	Nevada, Missouri
Loveall, Hester Eleanor, A.B.	Kansas City, Missouri
Lovelace, Stuart	Boulder
Loveless, Josie May, A.B.	Clayton, New Mexico
Lund, Cecile	Fruita
Lusk, Edith, A.B.	Ida Grove, Iowa
Lyles, Bertha Clemons	Cheneyville, Louisiana
Lynch, Birdie L.	Tulsa, Oklahoma
Lyons, Anna Beatrice, B.S.	Denver
McAndrew, Joseph Bernard, A.B.	Boulder
McBride, John	Barnard, Kansas
McCall, H. Nelson, Pd.B.	Westboro, Missouri
McCall, Margaret	Westboro, Missouri
McCelvey, Ruth	Temple, Texas
McCluskey, Ola, A.B.	Blackwell, Oklahoma
McConnaughhay, Leeta	Larned, Kansas
McConnaughhay, Maude	St. John, Kansas

NAME	RESIDENCE
McDonald, Philip Bayaud, B.S.; E.M.	Gouverneur, New York
McDowell, Audrey, B.L.	Cumby, Texas
McDowell, Flossie, A.B.	Cumby, Texas
McElhany, Margaret Mary	Omaha, Nebraska
McFerren, Della	Kansas City, Missouri
McGuire, Laureta Lee	Celeste, Texas
McGwire, Olive Josephine, B.E.	Omaha, Nebraska
McHenry, L. Chester	Oklahoma City, Oklahoma
McKay, Elizabeth Gleaning	Boulder
McKenna, Alexander G.	Washington, District of Columbia
McKenna, George A.	Washington, District of Columbia
McKenzie, Pearl Garnett, A.B.	Ruston, Louisiana
McLean, Gladys	Boulder
McLucas, Mary McRae	Boulder
McMechen, Elizabeth, Ped. M.	Los Angeles, California
McNair, Jeannette	Boulder
McNeil, Lois	Sedalia, Missouri
McNeil, Zana	Sedalia, Missouri
McPherson, Dorothy May	Pueblo
McReynolds, Zerah	Canyon, Texas
MacArthur, Earle Thomas, B.S.	Atoka, Oklahoma
MacArthur, Eunice S., B.L.	Atoka, Oklahoma
Madden, Grace Erminie, A.B.	Jacksonville, Illinois
Manger, Minnie Frances	Coffeyville, Kansas
Marihugh, Bernadeen	Idaho Springs
Markey, Joseph James	Denver
Marner, Niargua Woodward, Pd.B.	Salina, Kansas
Marr, Mary Annette	Denver
Marshall, Elma McLean, A.M.	Enid, Oklahoma
Marshall, Maude Waite, A.B.; B.S. in Ed.	Enid, Oklahoma
Martin, Bertha M., A.B.	Weaubleau, Missouri
Martin, Leila	Stafford, Kansas
Martin, Marguerite M., Pd.B.	Longmont
Martin, Winnifred	Brookville, Kansas
Mason, Myra	Colony, Kansas
Matthews, Mabel Ella	Pittsburgh, Pennsylvania
Mayland, Dorothy, A.B.	Boulder
Maynard, Donald Edmund	Boulder
Maynard, Wesley Kenneth	Boulder
Means, Kathryn E.	Fairfield, Missouri
Mendenhall, Halcyon M.	Sheridan, Indiana
Menninger, William Claire	Topeka, Kansas
Merialdo, Isabel	Eureka, Nevada
Merrill, Helen	Lamar
Merrill, Horace G.	Provo, Utah
Messick, Helena Blanch	Bolckow, Missouri
Miller, Belle V., A.B.	Denver
Miller, Pearl Delores	Denton, Texas
Mitchel, Irene, A.A.	Okmulgee, Oklahoma
Mitchell, Ruby	Shawnee, Oklahoma
Moncrieff, Lela Agnes	Boulder
Monroe, Beneda, A.B.	Sterling, Kansas
Montgomery, Ada Belle, B.S.	Fairfield, Iowa
Moore, Clara L.	Tulsa, Oklahoma
Moore, Lillian	Tulsa, Oklahoma
Morgan, Katharine Merrill, A.B.	Kansas City, Missouri
Morris, Clara	Marion, Kansas
Morrison, George B.	Nevada, Missouri
Morrison, Roger Leroy, C.E.; A.M.	College Station, Texas
Moser, Lillian	Topeka, Kansas
Muir, Hugh P.	Kansas City, Missouri
Murchison, Alexandrina	Griswold, Iowa
Murphy, Gertrude	Norman, Oklahoma
Murphy, Grace Elizabeth	Kearney, Nebraska

NAME	RESIDENCE
Murphy, Jack.....	Tulsa, Oklahoma
Myers, Stella Evelyn, Ph.B.....	Kansas City, Kansas
Neighbors, Nolia.....	Waco, Texas
Nelson, Anna Margaret.....	Kansas City, Kansas
Nelson, F. Pauline, A.B.....	Ogallala, Nebraska
Newell, Rose, B.S.....	Chandler, Oklahoma
Newkirk, Frances, A.B.....	Tipton, Missouri
Newkirk, Virginia, A.A.....	Tipton, Missouri
Norris, Gertrude E., A.B.....	La Salle
Norwood, Buckie Burton.....	Lockesburg, Arkansas
O'Connell, Eleanor, B.S.....	Salina, Kansas
O'Connell, Kathleen.....	Independence, Kansas
O'Connor, Hanna.....	Blaine, Kansas
Olcott, Stella May, A.B.....	Lyndon, Kansas
Oldham, Oscar Frasier.....	Coalgate, Oklahoma
Olnhausen, Charlotte.....	Columbus, Ohio
Omcirk, Selma.....	Pine Bluff, Arkansas
O'Neal, Virginia.....	Bay City, Texas
Orton, Carrie Elizabeth, A.M.....	Denver
Orton, Mary E.....	Denver
Osborne, Hazel Gregg, A.B.....	Boulder
Owen, Verna Marie.....	Lexington, Missouri
Palfrey, Vera.....	Franklin, Louisiana
Palmatier, Merle.....	Topeka, Kansas
Parker, Carl Huntington.....	Boulder
Parker, Jessie.....	Grand Island, Nebraska
Parker, John, Jr.....	Tyler, Texas
Parker, Myrtle Belle.....	Cheyenne, Wyoming
Patterson, Olive.....	Tulsa, Oklahoma
Pattinson, Anna.....	Huntsville, Missouri
Patton, Ora Jim, A.B.....	Alva, Oklahoma
Patton, Ursula, A.M.....	Boulder
Pearson, Ann Eliza, B.S. in Ed.....	Keytesville, Missouri
Peers, Katherine E., Pd.B.....	Boulder
Perkins, Earl James.....	Denver
Perkins, Olive, B.S.....	Hereford, Texas
Perry, Mabel Esther.....	Norton, Kansas
Peterson, Amos T., A.B.; Ph.G.....	Boulder, Montana
Petty, Maude Attell, A.A.....	Cowgill, Missouri
Phillips, Ray Marvin.....	Denver
Plimpton, Lois Elizabeth.....	Cincinnati, Ohio
Plimpton, Margaret Beach, A.B.....	Cincinnati, Ohio
Plummer, Bessie.....	Polytechnic, Texas
Polley, Mary Electa.....	Manila, Philippine Islands
Pollock, Jennie E.....	Fort Dodge, Iowa
Pollock, Olive Lena.....	College Springs, Iowa
Pomeroy, Mary.....	Salina, Kansas
Poorman, Elizabeth Ellmaker, A.B.....	Boulder
Pouder, Helen Catherine.....	Indianapolis, Indiana
Pressley, Elizabeth.....	Des Moines, Iowa
Prey, DuVal.....	Denver
Price, Delia.....	Boulder
Probasco, Ruth A., A.B.....	Wilmington, Ohio
Prophet, Orpha.....	Silvam Springs, Arkansas
Pruett, Helen.....	Ponca, Oklahoma
Purmort, Eunice Beryl.....	Boulder
Quinlan, Elizabeth, B.S.....	Manhattan, Kansas
Ranck, Mabel A.....	Gage, Oklahoma
Ranck, Ruth C.....	Gage, Oklahoma
Raphael, Ernest Leon.....	Ennis, Texas
Raynolds, Lucy.....	Waco, Texas
Reid, Nelle Lee.....	Kansas City, Missouri
Reilly, Marie Agnella.....	Boulder
Reimertsen, Stephanus Gustavus, A.B.....	Alta, Iowa

NAME	RESIDENCE
Reynolds, Louise.....	Lexington, Missouri
Reynolds, May L.....	Pittsburgh, Pennsylvania
Rice, Pauline Alice.....	Neosho, Missouri
Rice, Newton John, A.B.....	Boulder
Richards, Catherine Linnia, A.A.....	Hannibal, Missouri
Richards, Evadna.....	St. John, Kansas
Richardson, Charleen.....	Denver
Richart, Sue Connell.....	Kansas City, Missouri
Ricketts, Elizabeth, Ph.B.....	Boulder
Riley, Pauline.....	Lawton, Oklahoma
Rindom, Frank O., B.S.....	Liberal, Kansas
Ripperton, Clara B.....	Wichita, Kansas
Roberts, Elma Anderson, A.B.....	Morrow, Ohio
Robinson, Mildred, A.B.....	Austin, Minnesota
Rogers, Alice, A.B.....	Independence, Iowa
Roost, Amanda, A.B.....	Dakota City, Nebraska
Roper, Edith A., A.B.....	Marshall, Texas
Rosner, David.....	Boulder
Rowell, Miriam Allene, A.B.....	Kearney, Missouri
Royce, Lourie.....	Boulder
Rudolph, Jennie Stark, A.B.....	Denver
Rutherford, Esther L.....	Grinnell, Iowa
Rutherford, Sarah.....	Huntsville, Missouri
Ryan, William Joseph, A.B.....	Boulder
Rys, Ann Lorine.....	Plattsmouth, Nebraska
Sabin, Mary S., A.B.....	Denver
Sager, Vera, A.B.....	Gibbon, Nebraska
Sain, Lydia, M.L.....	Neosho, Falls, Kansas
Salisbury, Rachel, A.B.....	Clinton, Missouri
Sanders, Adline, A.B.....	Bryan, Texas
Sanders, Leila.....	Rocky Ford
Schaffer, Herold Morritz.....	Rochester, New York
Scheufler, Lena, A.B.....	Ellinwood, Kansas
Schneider, Claire Lucille.....	St. Louis, Missouri
Scott, Edna Pearle.....	Colony, Kansas
Scott, John Terrell, A.M.....	Lynchburg, Virginia
Seawell, C. Ruth, A.M.....	Greenville, Illinois
Seay, Lewis Martin.....	Groesbeck, Texas
Sells, Virgil Emerald.....	Denver
Severin, Helen.....	Utica, Nebraska
Shallenberger, James K., B.S.; M.E.....	Des Moines, Iowa
Shelby, Florence Ellis.....	Sapulpa, Oklahoma
Shelton, Reba Elise.....	Ada, Oklahoma
Sherman, Marguerite.....	Boulder
Shirley, Reuben Jefferson, B.S.....	Odessa, Missouri
Shoaf, Dorothy Noyes.....	Taylor, Texas
Shoaf, Robert Leonard.....	Taylor, Texas
Shue, Hazel, A.B.....	Edison, Nebraska
Shulters, Maude Alice, A.B.....	Boulder
Sibley, Mattile, B.L.....	Belcher, Louisiana
Siebert, Ida M.....	Chicago, Illinois
Simon, Mary Emma, A.B.....	Cincinnati, Ohio
Simonton, Helen.....	Horton, Kansas
Sipes, Faye.....	Great Bend, Kansas
Sloan, Elizabeth.....	Boulder
Slye, Florence Mary, A.B.....	Boulder
Smith, Ada Bluer, A.B.....	Topeka, Kansas
Smith, Bessie T.....	Cripple Creek
Smith, Lillie Blanche, Pd.B.....	Merwin, Missouri
Smith, Maude Isabel, A.B.....	Chicago, Illinois
Smith, Mona, A.B.....	Christopher, Illinois
Smith, Myrtle Faye.....	Lambert, Oklahoma
Smyth, Helen M.....	Kansas City, Missouri
Smyth, Jessie E.....	Kansas City, Missouri

NAME	RESIDENCE
Soderstrom, Verna, A.B.	Wichita, Kansas
Sohns, Rosalind A.	Laramie, Wyoming
Solt, Helen	Denver
Spencer, Winnie E.	Wallace, Nebraska
Spicer, Angie, Pd.B.	Harrisonville, Missouri
Spoor, Violet, Ph.B.	Fowler
Squires, Annie Alma	Henrietta, Texas
Stailley, Victor O.	Denver
Stanley, Hazel Frances	Anthony, Kansas
Starling, Helen, A.A.	Olean, Missouri
Stegner, Louise, A.B.	Omaha, Nebraska
Stevens, Alice Lucile, A.M.	Nickerson, Kansas
Stevens, Anne	Mexia, Texas
Stevens, Clara	Fort Worth, Texas
Stewart, Carter	Louisville, Kentucky
Stewart, Marguerite Theresa, A.B.	Blair, Nebraska
Stratton, Marjorie	Hillrose
Strong, E. Vera, B.S.	Sterling, Kansas
Stuart, Ruth	Sparkman, Arkansas
Stueven, Elizabeth	Kansas City, Missouri
Swayne, Ida Loyd	Boulder
Swoboda, Marie	Plattsmouth, Nebraska
Taggart, Anna, A.M.	Alton, Illinois
Talbert, Marcia	Holton, Kansas
Talbot, Anna Lee, B.S.	Muskogee, Oklahoma
Taliaferro, Edith Peyton	Bunkie, Louisiana
Taliaferro, Ruth L.	Bunkie, Louisiana
Tarkoff, Harry	Boulder
Tarkoff, Irma	Boulder
Taveira, Agnhild Mahumed.	Rockford, Illinois
Taveira, Horace A., E.E.	Rockford, Illinois
Taylor, Mabel E.	Marion, Kansas
Terwilliger, Mary Elizabeth	Boulder
Thomas, Hazel, A.B.	Boulder
Thomas, Ola M., B.S.	Salina, Kansas
Thompson, Anna Mason, B.S.	Kansas City, Missouri
Thompson, Helen Robertson	Shackelford, Missouri
Thompson, Nesta Mary, A.B.	St. Louis, Missouri
Thomson, Eva May	Glendale, Arizona
Thorpe, Helen Gertrude, A.B.	Morganville, Kansas
Tiffany, Harriet Wilcox, A.B.	Boulder
Townsend, Jane, B.S.	Girard, Kansas
Townsend, Marion L.	Tecumseh, Nebraska
Traxler, Ralph Newton	Lamar
Trenoweth, Laura, A.B.	Central City
Trolinger, Lelia Gertrude, Pd.B.	Clinton, Missouri
Tuffy, Arla Evangeline, Pd.B.	Grand Junction
Unsel, George Peterkin, A.M.	Westminster
Vagnino, Louis Salvatore	Denver
Van Aken, Sadie, A.B.	Ellsworth, Kansas
Van Antwerp, Maude L.	Macomb, Illinois
VanHook, Joseph Orlando, Pd.B.	Berea, Kentucky
Visser, Birdie M.	Hutchinson, Kansas
Vogel, Florence	Boulder
Wagner, Edith	Ellsworth, Kansas
Wagner, Ella Jane	Ellsworth, Kansas
Wagor, Pirlh	Belleville, Kansas
Walsh, Anne	Kokomo, Indiana
Ward, Leon Stevens, A.B.	Greeley
Ward, Ruth Ethelyn	Topeka, Kansas
Warnock, Catherine, A.B.	Fort Morgan
Warren, Perry Woodruff	Cheyenne, Wyoming
Watkins, Clay Celia, A.B.	Boulder
Watton, Frances Emmeline	Oklahoma City, Oklahoma

NAME	RESIDENCE
Weaver, Katharine.....	Van Buren, Arkansas
Webb, Besse, A.B.....	Boulder
Webster, Bessie Althea, A.B.....	Alamosa
Weeks, Winifred M., A.B.....	San Rafael, California
Weinberg, Toinette.....	DuQuoin, Illinois
Weiser, Nona.....	Alva, Oklahoma
Welling, Corinne, A.M.....	Indianapolis, Indiana
Westaway, Lois Bessie, A.B.....	East Las Vegas, New Mexico
Westmoreland, Ethel.....	Guymon, Oklahoma
Westover, Irene.....	Fairburn, South Dakota
Weyrich, Clara E.....	Plattsmouth, Nebraska
Wheatley, George.....	Boulder
Whitcomb, Selden Lincoln, A.M.....	Lawrence, Kansas
White, Eunice.....	Arcadia, Nebraska
White, Oma B.....	Bowling Green, Kentucky
White, Wilford Lenfestey.....	Boulder
Whitney, Caroline Elizabeth.....	Boulder
Whitten, Petrine Charlotte.....	Boulder
Wiggins, Loretta Seattle.....	Canyon, Texas
Wilbert, Leora M.....	Plaquemine, Louisiana
Wilken, Carrie, A.B.....	Atlantic, Iowa
Wilkinson, Janye, B.S. in Ed.....	Huntsville, Missouri
Williams, Birdie, B.S.....	Osawatomie, Kansas
Williams, Erna.....	Kemp, Texas
Williams, Sallie R.....	Quincy, Illinois
Williamson, Mary Alice, A.B.....	Grover
Wilson, Elizabeth Eichenberger.....	Holton, Kansas
Wilson, Mildred.....	Richfield, Kansas
Wilson, Ruby.....	Guymon, Oklahoma
Windsor, Alma May, Pd.B.....	Booneville, Missouri
Winkler, Emily A., A.B.....	Muskogee, Oklahoma
Winn, Eleanor M.....	Dallas, Texas
Wisdom, Belle.....	New York City, New York
Wood, Vesta, Pd.B.....	Carthage, Missouri
Woodard, Louise Matilda, A.B.....	Saguache
Wooster, Margaret.....	Centreville, Louisiana
Wright, Laurence Edward.....	Boulder
Yolton, Nora W.....	Pittsburgh, Pennsylvania
Young, Grace Effie, A.M.....	Bethany, Nebraska
Young, Isabel Scott.....	Walsenburg
Young, Myrton G., A.B.....	Florence
Zilles, Beulah M., A.B.....	Stanberry, Missouri

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